ANNUAL MINING REVIEW
TWENTY PAGES

THE DAILY NEWS

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VOL. 4 NELSON, B. C., MONDAY, JANUARY 1, 1906 NO. 214

Provincial Library
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JAN 3 1906
VICTORIA, B.C.

THE DAILY NEWS WISHES ALL ITS READERS A HAPPY AND PROSPEROUS NEW YEAR

Southern British Columbia enjoyed a large measure of prosperity in 1905. The new year opens with bright prospects of a continuance of favorable industrial conditions. The mining industry has emerged from a period of depression and is now entering upon what we all hope will prove to be an era of steadily increasing activity and profit to those engaged in it. The lumber industry is on a sound basis and with the rapid settlement of the new provinces there is assurance of a good and growing market. The remarkable success that has attended fruit culture in southern British Columbia opens a new source of wealth and from now on will be the means of adding to our population a very desirable class of settlers. These conditions afford reasonable certainty of the satisfactory fulfilment of the good wishes now extended to all its readers by

THE DAILY NEWS.

NEW YEAR GREETINGS

General conditions throughout the province at the opening of the new year are more than encouraging. In the Kootenay country, where mining holds so prominent a place, it must be particularly gratifying to know that every indication leads to the belief that when the statistics are completed, 1905 will stand out as the banner year for mineral production eclipsing the record made in 1901. Everywhere the evidences of British Columbia's advancement are so apparent, that it is unnecessary to dwell upon them; and in this New Year greeting I feel that we all may consider it good fortune to live in such a magnificent province.

RICHARD McBRIDE, Premier of British Columbia.

The healthy progress made by British Columbia during the past 12 months warrants bright anticipations for the immediate future; and it is therefore with more than ordinary pleasure that, at the request of The Daily News, I extend to its readers a New Year greeting. At the last session of the legislature as finance minister, I was enabled to announce a surplus of $27,000 for the fiscal year ending June 30, 1904, and it is gratifying to state that the showing will be even more favorable for the similar period of 1905. The increase in the revenue is largely due to improving business conditions. From land sales, timber and various other sources which may be looked upon as an index of industrial development, there are gratifying returns, larger even than anticipated; and from present indications, this bids fair to continue. Naturally, through additional attention being drawn to the province, the influx of population and the larger investment of capital must inevitably follow, giving more employment, opening up new avenues of wealth production and resulting in a more numerous settled population. And it might not be amiss to refer to the important position fruit growing is assuming in portions of the province where until recently, such an industry was not thought of. The success of Kootenay, in winning an award at the recent exhibition in London, proves how well fruit thrives in that part of British Columbia. All of these things make for the betterment of the people and the growth of the province as a whole. Consequently with these prospects in view and thankful for the benefits of the year just passed away, we may look forward with confidence to a Happy New Year.

ROBT. G. TATLOW, Provincial Treasurer.

On the threshold of the New Year, I wish to extend most cordial greetings to the citizens of Nelson with my most sincere wishes for the prosperity and happiness of all during the next 12 months. I would also congratulate them on the fact that in spite of temporary differences of opinion on minor matters, there can be no doubt in the city or outside that all the citizens of Nelson are loyally and whole heartedly devoted to the interests of the city. May the coming year see the early and satisfactory completion of the enterprise for which Nelson has sacrificed so much, and which is so necessary to the welfare and progress of the city as a whole.

W. G. GILLETT, Acting Mayor of the City of Nelson.

Phoenix, the greatest gold-copper ore shipping camp in Canada, which sent out nearly 750,000 tons in 1905, and, with the prospects of 9100, expects to witness the greatest prosperity in its history, sends you greetings. We owe much to your valued paper which is read with no little interest here. The news is fresh, bright and reliable and just what the people want to read. We wish you a happy New Year and continued prosperity for The Daily News.

G. W. RUMBERG, Mayor of the City of Phoenix.

NEW YEAR GREETINGS

In replying to your request for a New Year message, I am sure I could not do better than make my message refer to the article in your editorial columns of Sunday, 24th inst., where you state that "no case of real poverty is known to exist in Nelson." What a grand proof of the prosperity of the west. A city of 5000 people and no poverty. You are not isolated in this respect. There are many towns larger and smaller than Nelson, in British Columbia who could send out the same glad message. May the prosperity that British Columbia, at the present time enjoys long continue and may you ever, when this joyous season comes along, be able to say "We know of no real case of poverty in Nelson." I compliment you on the feelings that prompted you to add in concluding the article referred to, that you were ready and willing to see that any needy ones in your midst would be comforted and that Santa Claus would not neglect the homes of such. Wishing you a Prosperous and Happy New Year.

G. T. ROGERS, Mayor of the City of Cranbrook.

Rejoicing in the progress of the year 1905, here's to the continued prosperity of the province, the district and all our industries. Here's that 1906 may be bright and full of success.

FRED STORK, Mayor of the City of Fernie.

The citizens of the Boundary metropolis send New Year's Greetings to the citizens of the Kootenay metropolis.

JEFFERY HAMMER, Mayor of City of Grand Forks.

We in the Boundary have every reason to be thankful for the prosperity of the past year. While there has been nothing in the nature of a boom, except perhaps, a little railroad boom in Midway, general business has been good. As for the future: With copper at 19 cents; with the enlargement of our local smelter to take place almost immediately; with one furnace blown in at Boundary Falls, and the other one to be blown in early in the coming year; with promise of a still greater production in both high and low grade mines; with probable railroad construction up Boundary creek; with our city in good condition to take advantage of the coming good times, and with a district that cannot be excelled on the continent for natural wealth and healthy climate, the outlook from a pessimist's point of view must be very gloomy indeed—he is likely to loose his job.

Wishing you and your staff the compliments of the season and great prosperity for your paper during the coming year.

GEO. R. NADEN, Mayor of the City of Greenwood.

The citizens of Victoria join hands today with the people of Nelson and heartily wish for them a bountiful and bright New Year. May happiness and prosperity crown the Queen City of the Kootenays. Wishing yourself, personally, the compliments of the season.

L. GOODACRE, Acting Mayor of the City of Victoria.

Eastern Canada is learning more and more to realize the great and wonderfully varied resources of British Columbia and to admire the strong, self reliant spirit of its people. May the east and west be bound together not only by closer and even stronger ties of intercourse and commerce, but by a still higher patriotic spirit and more intense love of country. To all readers of The Daily News and to all the people of the great Pacific province I send cordial New Year Greetings.

R. L. BORDEN, Leader of the Conservative Party in Canada.

TOTTERING TO A FALL

Count Witte's Ministry Vehemently Attacked by Liberals

Pitiful Last Stand of the Revolutionaries at Moscow--Further Outbreaks in Other Cities--Durnovo Grasps at Power

St. Petersburg, Dec. 31—The report that count Witte is booked for retirement in a few days is again being persistently circulated. The Nasha Shisn, which declares it can guarantee the accuracy of its statement, says that M. Durnovo, minister of the interior, who is worshipped as an idol by the court Camarilla, which believes that his stern policy alone can put an end to the existing anarchy, has accomplished the downfall of the count, and will be elevated to the premiership.

M. Brainchanlloff is out with a strong article in the Slovo, entitled "Witte Must Go," in which he asserts that the victory at Portsmouth has been followed by defeat at St. Petersburg. His line of argument is that anarchy has been enabled to make headway because true liberals doubt whether Russia is to have a constitution or whether the manifesto was only a tactical move to lull them to sleep. It was Witte's first move, according to the writer, to remove this doubt, but it is charged that he still maintains an equivocal role. He has not, the article says, even safeguarded the prerogative granted by the ukase creating a responsible cabinet of ministers, but has allowed M. Durnovo, whose patent purpose is to cut off the heads of anarchy and constitutionalism at the same time, to report directly to the emperor and to secure his majesty's approval of measures without consulting the premier.

"A man like M. Guchkoff, in whom the people have confidence, must be at the head of the government," says M. Brainchanlloff. "It is impossible for count Witte who never was a constitutionalist at heart, to continue to play a double role longer. The situation imperatively requires sincerity and we must have less of Witte's dexterity and dishonesty."

The government is now proceeding on the theory that a victory over the Reds is assured. It is displaying a strong front and announces that it will no longer tolerate in its service employees who are plotting against it. The ministers have been authorized to summarily dismiss such employees. Foreseeing the probability that it will be impossible to hold elections in the Baltic provinces, the Caucasus and other disturbed districts, the government has provided that when the certificates of half the members elected are received the douma will be immediately convened.

At a meeting of the council of workmen last night some delegates, pending the organization of an armed revolution, advocated a recourse to the old terrorist plan of requesting a tribunal to try condemned officials guilty of tyranny, to publish the reasons for such condemnation and then to execute the verdict of the tribunal. This, the delegates said, would be preferable to the indiscriminate killing of police and Cossacks, who might be innocent.

Not satisfied with the protection given by the secret police to count Witte, whose life is in constant danger, officers of the Preobrolensky guard regiment were detailed to guard the premier, but on Friday they declined to do further service in this connection, saying it was beneath the dignity of guard officers to do police duty.

Paris, Dec. 31—The St. Petersburg correspondent of the Petit Parisien, says: "Taking advantage of the absence of the Cossacks and the general insufficiency of the military guard in that region, the miners and metal workers in the Don district, have seized several towns and an important railroad depot. The government is hastily sending reinforcements, but as the revolutionaries are well armed and organized, occurrences similar to those in Moscow are awaited.

The revolutionaries blew up a bridge over the Volga river at Zyscea in the government of Silisirk while a military train was upon it and hundreds of soldiers were drowned. The destruction of this bridge paralyzes railway communication with Siberia.

Moscow, Dec. 31—White flags flying from a dozen factories and tenement houses in the district where the revolutionaries made their last stand, now bear mute witness to the end of the December uprising in Moscow, the entire district is now occupied by troops. During the night the vast majority of the members of the "unfighting legions" either surrendered or were throwing away their arms in an endeavor to escape in the guise of peaceful citizens. Only the members who acted as a guard to the revolutionary committee stuck to their colors and the surrender of this handful this morning furnished the last act of the sanguinary drama.

SPORTS AND PASTIMES

EVERY ATHLETIC EXERCISE FAVORED IN NELSON

NATURAL ADVANTAGES GREATER THAN ELSEWHERE

In the sphere of athletic sports and amusements the year 1905, while it resulted in only two championships for Nelson marked a general revival of interest in athletics among the people of both sexes and all ages and tastes. There are probably very few in Nelson who do not take a direct personal interest in the success of some one or more athletic organizations.

The year began with curling and hockey and in both Nelson achieved the highest honors for Kootenay. The bonspiel of the Kootenay Curling association was held in Nelson early in February. Nelson rinks won the All Comers match against the picked curlers of other cities. Of eight other tournaments Nelson won four, Rossland two, and Phoenix and Greenwood one each; and in the individual competition for points a Nelson curler, A. T. Walley, won second place. The success of the bonspiel cannot be measured merely by the trophies won. The hospitality and whole souled sociability with which the visitors were treated is conceded to have set a new standard for Kootenay.

The hockey club lost but one match during the season out of seven played and again won the cup for Kootenay. The team for 1906 has practically the same personnel as last year's champions and prospects are bright.

In the spring efforts were made to revive lacrosse, association football and baseball. The football team, under efficient management, attained excellent form and easily won its only game with an outside team, Sandon. The success developed great interest and several local teams were organized and afforded excellent sport and practice.

Lacrosse and baseball wree onl ypartially successful. The old players in both had dropped out of the game and young players of promise were not numerous enough to fill gaps.

The lacrosse team fairly held its own, winning from Rossland, drawing with Cranbrook and losing to Regina.

The baseball team afforded pleasure to spectators by several well contested games, all of which, however, were won by the visiting teams.

The season of 1905 was the most successful the Nelson Boat club has ever enjoyed. Two crews were sent to compete in regattas at the coast, one to Portland during the Lewis and Clarke exposition, and one to Victoria in the annual regatta of the North Pacific Association of Amateur Oarsmen. Both crews met with accidents and lost their races, but they maintained Nelson's reputation as a home of clean and manly sport.

At home the club's record was one of unbroken success. Numerous club regattas reveloped finely contested races and roused the interest and enthusiasm of all citizens. Rowing is undoubtedly the most healthful and exhilarating of all summer sports, and one for which Nelson's natural advantages are unexcelled anywhere and unrivalled in the west.

Tennis, badminton and basketball all flourished, with more participants than ever before. Basketball is no longer confined to the girls of the high school although they have the credit of introducing it in Nelson. It has been taken up by the high school boys and by the soldiers of No. 2 company R.M.R., whose big armory is admirably adapted for the sport.

Lawn bowling, the summer counterpart of curling, flourished also, but with probably fewer players than during 1904.

The Nelson launch club had the best year in its history. The season's program included numerous races, excursions and picnics, and a visit in force to Kaslo to participate in the celebration of Empire day..

No account of the attractions offered by Nelson to lovers of sport and recreation would be complete without a reference to the delights of the hunters and fishermen. For the latter the favored spots are still Midge creek, Procter and Slocan Junction though many a trout was caught by skilful anglers at scores of other points along the West Arm and the river. Each year as settlement extends and woods are cleared for farming, drives the big game farther back into the hills and forests. Grouse and rabbits are still plentiful on the neighboring hills, and geese and ducks are found in the bays and at the marshy mouths of creeks. But the hunter of big game must go farther afield. The western slope of the iron ridge east of Kootenay lake and the high mountains bordering the Slocan river valley, afford deer and mountain goat in unlimited quantity. Many a splendid bag was made by adventurous hunters who did not shrink from mountain climbing. The fame of the Kootenay as a sportsman's paradise has spread far beyond the province and attracted visitors from Chicago and other cities.

AT TH EHOSPITALS

Kootenay Lake general hospital, Dr. Campbell, resident physician, Miss Evans, matron. During the past year 301 patients were treated at this institution and 15 deaths occurred as against 335 patients and 10 death the previous year.

The record by months of patients treated and deaths for 1905, is as follows:

	P.	D.
January	26	0
February	24	0
March	18	1
April	21	1
May	23	2
June	27	3
July	15	0
August	31	2
September	30	2
October	32	1
November	27	1
December	27	2
Total	301	15

In May last Dr. Hamilton resigned the position of resident physician and was succeeded by the present incumbent. There was no local epidemic during the year but a number of patients suffering from typhoid fever were brought in from outlying districts.

Home hospital—Misses Desbrisay and Ferris. During the past year 142 patients were treated and but two deaths occured.

Both institutions are in a flourishing condition financially and well equipped to look after the sick and suffering during the coming year. In place of the usual annual grant from the city last year the city paid for each individual public patient at a fixed rate said to be satisfactory to all concerned.

IN THE LAW COURTS

During 1905 there were 75 supreme court suits instituted here and 203 county court actions, showing a slight decrease in both courts from the previous year.

The local cause celebre during the year was the final trial of the Slocan Star Mining company's action against the Byron White Mining company, an extralateral rights case of great importance, which resulted in a victory for the defendants. The West Kootenay Power & Light company's action against the city, now on appeal, was another local suit of unusual importance.

Turning to the criminal side, the list of trials was unusually light and chiefly for minor offences. There were no executions and no trials for murder at the assizes during the past 12 months. The two criminal trials that excited most interest were Rex. vs Roberts and Rex. vs. Atkinson, for attempted murder and arson respectively, which resulted in the acquittal of the accused in both instances.

MURDER OF STEUNENBERG

Police Act on Theory That Deed Was The Work of Coeur d'Aleners

Boise, Idaho, Dec. 31.—It develops today that the assassination last night at Caldwell of former governor Steunenberg with a dynamite bomb was perpetrated by some one who pulled a wire that exploded the dynamite as the former governor was closing the gate of his home. It was at first thought that the bomb was arranged to explode automatically when the gate was opened. It also develops that Steunenberg was murdered as a result if his activity in crushing the miners' strike riots at Coeur d'Alenes in 1899 and on this theory one man has been arrested.

M. Steunenberg regained consciousness before he died, 25 minutes after the explosion, but could not answer a question. The county has offered a reward of $10,000 for the apprehension of the murderers and has sent a sheriff to assist in the search.

WEATHER OF THE YEAR

OFFICIAL REPORT COVERING CONDITIONS OF 1904-1905

STATISTICS THAT TELL OF THE CLIMATE OF NELSON

From the records of the sub-branch of the dominion meteorological bureau in this city the following records have been gathered as to the conditions prevailing in this city for the past month and year. The record gives a valuable indication as to the climate, giving not only the extremes of temperature, but the average for the year, the rainfall, the total precipitation and the duration and severity of the frosts, noting their lateness in the spring and their first occurrence in the autumn.

For the month just ended the average temperature throughout the 24 hours of the day, was 32 degrees Fahrenheit, being .7 degree warmer than December, 1904. The average maximum temperature was 36, and the average minimum 28 degrees. The rainfall amounted to .60 inch and the snow fall of 17 inches, the totad precipitation being 2.3 inches, as against 2.45 for 1904. The average daily range of the thermometer was 8 degrees and the highest temperature, 45 degrees, was recorded on Dec. 26, and the lowest, 15 degrees on Dec. 2. There was sunshine on 23 days. Rain fell on 7 days and snow on 10 days.

For the year just ended the average temperature was 46 degrees as against 45.7 degrees for 1904. The average maximum temperature was 56 degrees and the average minimum 36 degrees as against 55.9 and 36.43 degrees respectively, for 1904. The total rainfall for the year was 22.58 inches and snow 54.5 inches, the total precipitation being 28.05 inches. In 1901 the rainfall was 14.06 inches and the snowfall 162.45 inches, the total precipitation being 30.30. During 1904 and 1905 there was no month in which occurred no precipitation. The lowest amount was recorded in September, 1904, .48 inch, and the highest for the year was 7.02 inches in February. In 1905 the lowest was in August, .63 inch and the highest in April, 4 inches. In 1904 snow occurred in five months, the record for November, however, being1.5 inches, which did not remain on the ground. In 1905 snow fell in four months only, there being none in March. But there has been no month in the past two years when no rainfall has been recorded, showing that frosts are not prolonged.

The latest frosts recorded in 1904 were May, 11, 1 degree; May 7, 3 degrees; May 4, 2 degrees. In 1905 the latest frosts were May 1, 2 degrees; April 27, 1 degree; April 10, 2 degrees.

The earliest frosts in 1904 were Sept. 18, 2 degrees; Oct. 16, 2 degrees; Oct. 23, 2 degrees. In 1905 the earliest frosts were Oct. 10, 4 degrees; Oct. 13, 3 degrees; Oct. 14, 1 degree. No frost occurred between the dates of any of these sets.

The coldest recorded in 1904 was 7 degrees above zero on Feb. 9 and in 1905, 6 degrees below zero, Feb. 10. The hottest was 94 degrees on July 10, 1904 and 91 degrees on Aug. 9, 1905. The average maximum temperature for Feb., 1904, was 35.3 and the minimum 23.3. For 1905 the figures were 32.7 and 17.7 respectively. The maximum and minimum temperature for July, 1904 were 80.4 and 51.4 respectively, the corresponding figures for the same month in 1905 being 83 and 49.

The average daily range of the thermometer for 1904 was 18.47, the extreme monthly range being 9.8 for January and 30.1 for August. For 1905 the average daily range was 19.3, the extreme ranges for the months being 8 for January and 34 for July. The nights are invariably cool in the summer months, rendering the climate very agreeable.

As to the snow on the ground the deepest recorded in the early months of 1904 was 18 inches on the field and 12 on the road. Sleighing was good up to March 5, but ceased for the season March 27. On Dec. 23 sleighing was possible but was not good until Dec. 28. In the January following there was fair sleighing up to Jan. 16 but on Jan. 20, the warm chinook winds had left the road bare. After this date there was a couple of days good sleighing but it ceased altogether after Feb. 19. In November an early fall of snow gave a weeks good sleighing at the end of the month and beginning of the next but a thaw again set in and sleighing was not again practicable until December 25, and not good until a couple of days later.

During the year just past there were only 64 days when the sun was not visible, 14 of these occurring in January and 11 in November. On the other hand there were 158 days on which either snow or rain fell for a longer or shorter duration, the months in which there were fewest of these days being January, July and August, the rainy days in these months being 11, 11 and 9 respectively.

During the year the longest duration of frost was ten days in January, which period was followed by another of 13 days when the thermometer rose daily above freezing point, often not sinking below at night, this was followed by the coldest spell of the winter until Feb. 15, which was followed by a thaw precursing the spring. Later in the year a cold snap occurred for three days, at the very end of November, but during the whole of December there were not two days in succession when the thermometer remained belowing freezing point. The cold spells of the year were therefore three, aggregating 29 days and including a colder snap than had been known for several years past.

GREAT STRIKE OF PRINTEDS

New York, Dec. 31—The great war of the Typographical union against the master printers begins tomorrow all over the country and some local trouble may be expected as the result of the war. The New York Typothetae having rejected the demands of Typographical union No. 6 for an eight hour day, a general strike of the typesetters has been ordered, which involves nearly every large printing establishment in the city. Many of the larger houses have for the past few weeks made efforts to bring in nonunion printers and although a great many of them have been secured, the strike will nevertheless cause considerable difficulty to the local printing trade. The members of the New York Typothetae maintain that the granting of an eight hour day would cut their profits to such an extent that it would practically drive them out of business. They assert that the margin of profit in their business is very small, owing to the great competition and any serious reduction in profits would cause direct loss.

Several hundreds of nonunion printers, most of whom were employed in some of the open shops, have been induced by the larger establishments to take the places of the strikers and many of the smaller establishments find themselves practically without help. The New York Typothetae has sent out orders all through the country for nonunion men, offering them their railroad fare and expenses and the promise of steady employment. Every man must sign a contract stating that he is not a member of any labor union.

PROMISING PROPERTY.

Broadview Mine of Lardeau Shipping Regularly to Trail Smelter.

Manager A. Houston of the Broadview mine, Lardeau, wa seen yesterday by a representative of The Daily News while here on business connected with the marketing of the ores of his mine. Mr. Houston seemed very pleased with the success achieved by him and his companions in the venture. He said the Broadview is a mine situated on Great Northern mountain about a mile and a half north of Ferguson and on the same range as the Silver Cup. The property is one of the old Horne-Payne group and some work had been done before he and his friends took charge of it some two years ago. He had seen the property and was convinced of its ultimate success and had interested other people in it, mostly residents of Trout Lake city and other places in the Lardeau. They had gone on steadily with the development and for the last few weeks had been shipping profitably to Trail. The development of the mine up to date consisted of a couple of shafts and several drifts, totalling over 1000 feet.

There are two leads, one of which is about 25 feet wide the character of the ore at the surface being an iron carbonate containing galena. Another lead of lesser width is free milling. The curious discovery was made as the shafts went down on the lead and depth was thus gained that the galena in the iron carbonates is being gradually replaced by copper. The galena values are as rich as ever, even better than upon the surface but the quantity has become less and the ore is becoming dryer. However, the richness in iron, added to the replacing copper values has made the property of better value to the smelters, having such excellent fluxing qualities. The Broadview shipped 20 tons last week to the Trail smelter. The returns give satisfactory profits and show upwards of 27 per cent iron carbonates.

LONDON CABLE LETTER

FASHIONABLE CAROL SINGERS ARE MAKING MONEY.

SMOKING DENIED TO BE A CAUSE OF CANCER.

New York, Dec. 31.—A special cable to the New York Herald from London today says: As several Chicago surgeons have issued terrible warning to smoking mankind, seeing the cancer lurking in the bowl of the extra pipe, seeing it stamped on the band of the fat cigar and in the slender shape of the inside of the cigarette, an Express representative asked a famous London surgeon what he thought, and he said:

"It is very difficult to give an opinion on the subject. A man may come to me with a malignant disease of the throat and mouth; he has never been seen without a pipe, and his friends say: 'I told you so'— but people forget that many non-smokers develop cancers. I saw a patient this morning who is 40 years old. He has carefully avoided tobacco all his life believing that he would escape the universal curse, but he had cancer of the tongue, and I could only give him a few months to live. There is on doubt that there families with a record of the disease should live by rule and smoke very little. On the other hand a clever dentist, who is at the top of his profession, considers that smoking often safeguards against disease, and believes that the spread of cancer is due to unhealthy conditions of the mouth.

"Some people come to me," he said, "who evidently never expended a minute on the care of their teeth. I believe that the supposed injurious effect of tobacco is greatly exaggerated. A case came under my notice a day or two ago of a lady whose teeth were in a terribly septic condition and who suffered from ulceration of the gums. She informed me when I wondered at her immunity from internal disease that she owed it to smoking 20 cigarettes a day and thus purified and disinfected her system."

Society "waits" in evening dress are a pleasing variety of the old fashioned types of minstrels. At the same time they are a more expensive luxury than their predecessors. The takings of the Highbury Strollers band of amateur musicians who netted $600 in a three-night serenade of the suburbs, would open the eyes of the old style "waits" who cheerfully sang "God rest you merry gentlemen" throughout the night and thought $25 worth of small coin an adequate return for their labors. But even the Highbury's record pales before that of a band of masked singers who have been singing carols nightly outside west end houses.

An element of mystery surrounds these "waits." The men wore ordinary evening dress and the women wore wrappers and furs, and black crepe masks hid the whole upper part of their features. Their west end audience appeared to find the listening a novel way of spending the intermission between dinner and bridge, and apart from the excellency of the singing of Tennyson's "When Christ was born," with its oft-recurring refrain, "In Excelsis Gloria," no one whom the singers honored with a carol dared repulse them, for the black crepe masks might hide the features of a friend. Gold, sometimes crisp new bills, fluttered into the little block velvet bag handed round, for it was understood that the various charities were to benefit from the returns which average $200 and $250 nightly.

THREE NEW FURNACES

For B. C. Copper Company's Greenwood Smelter to be Ready by Sept. 1

Spokane, Dec. 31—F. L. Underwood of the British Columbia Copper company, who has been in the city to confer with Keffer, manager of the company's mines and smelter at Greenwood, reports that the three big new furnaces, with a capacity of 50,000 tons per month, should be running about Sept. 1. "Contracts for machinery," said he, "were made four months ago. The improvements will cost about $300,000, and we shall pay for them out of our earnings. The mines and smelter together will work from 300 to 500 men. Meanwhile, until the new plant is completed we shall work our old plant and shall dismantle it on the completion of the new works. I think copper will stay around 15 or 16 cents, and there ought to be good money in it for our company. Our corporation is capitalized for 400,000 $5 shares, and they are selling on the New York curb for about $9.50.

TROUBLE AT KHARKOFF

Kharkoff, Dec. 31.—In a collision today at Linbotin railroad station between soliders and railroad strikers 30 persons were killed and many injured.

SIX ROUND BOUT.

New York, Dec. 31.—Articles of agreement were signed here today for a six round bout between Terry McGovern and Battling Nelson, to take place in Philadelphia March 16.

DEVONSHIRE IS DEFINITE

Says There is No Danger of Home Rule for Many Years

Leader of Free Trade Unionists Exhorts Followers to Support Liberals Rather Than Fiscal Reformers

London, Dec. 31.—The Duke of Devonshire, liberal-unionist, has issued an important election manifesto in which he virtually advised the free trade unionists to support the liberal candidates rather than the protection unionists, by treating the Home Rule question as a mere side issue. He dealt the strongest blow yet delivered against Mr. Balfour's election tactics. The duke asserts that there is no indication that the opinion of the country has changed since the rejection of the last Home Rule bill, and that it is in the highest degree improbable that the government of sir Henry Campbell-Bannerman will incur the risk of introducing another such measure in the next parliament. Therefore he says the question of free trade versus protection must be the prime factor in the coming elections and he declares there must be no deviation. The duke confesses that he knows no more now than when he left the late government, of what is implied by the Balfourian scheme which its authors declare to be acceptable to free traders and protectionists alike. On the other hand, he says, there is no ambiguity about the Chamberlain propaganda which is avowedly protectionist. The manifesto contends that the unionist party organization has largely been captured by the protectionist wing and that, should the party become predominantly protectionist, there will be either real danger to free traders or the prospect of the exclusion of the unionist party for an indefinite period from either power or influence. In conclusion the duke declares that it is the duty of the unionist free traders to take such action as will prove that the unionist party as a whole whether in power or in opposition is still uncommitted to a retrograde fiscal policy by whomsoever it may be proposed.

TAMBOFF'S GOVERNOR DIES

London, Jan. 1.—A despatch to a news agency from St. Petersburg, says that general Bogdanovitch, vice governor general of Tamboff, central Russia, who was wounded three times by revolver shots on Friday has died of his wounds.

REWARD FOR TRIPLETS

Wetaskawin, Alberta, Dec. 31.—People of this town have subscribed $125 as a presentation to Mrs. (Rev.) Austin, who recently gave birth to triplets.

NELSON = YMIR = AINSWORTH

The year's mining in the Nelson district was, on the whole, progressive. Most of the older properties continued operating, and in several instances developments were decidedly satisfactory. There were a few exceptions, such as the going into liquidation of the Athabasca-Venus Co., and the small advancement made by the Juno; while the financial troubles of the Wilcox, at Ymir, were another cause for regret, albeit the mine is still being worked. The B. C. Standard Co., owning the Hunter V. group, near Ymir, had the common experience of most mining companies that undertake to open up a mine without ample capital available for development and equipment—it could make no headway with financial as well as physical difficulties to contend against. However, the leasing arrangement made with the Hall Mining & Smelting Co., admitted of the continued working of the mine, from which the company has derived some monetary advantage besides having opportunity to size up the position and gauge the chances of getting more capital to adequately explore the big mineral occurrences that make the property remarkable.

The changed conditions at the Ymir afford cause for much gratification. The Ymir company has long been so widely known, and its failure to continue to earn profits similar to those that a few years ago gave it such prominence has been so disastrous to the credit of this part of British Columbia as a desirable field for mining enterprise, that its restoration to favor among those prepared to find money for good mining undertakings cannot but be to the benefit of the industry in the province. It is therefore to be hoped that the improved outlook lately reported will be made still further satisfactory by the actual recovery of good gold values from the shoots of ore now considered so promising, and that no set-back will be experienced.

The Silver King, Granite-Poorman, one or two of the 49-Creek properties, and the La Plata all promise well, so that 1906 should make an excellent showing in mining. The profit-earning results the Hall Mining & Smelting Co. has again been able to report are encouraging, while the establishment of the headquarters of the Canadian Metal Co. in Nelson, is a matter for general congratulation. The year certainly might have been a better one, still it was satisfactory on the whole, and the confident expectation is that there are good times in store for the mining industry in the Nelson district. Notes on the mining properties of the district follow:

Silver King.—This mine has been worked throughout the year under the arrangement made between the owners—the Hall Mining & Smelting Co., Ltd.—and Mr. M. S. Davys, viz., that the latter should undertake the management and work the Silver King mine and the Kootenay Bonanza and American Flag claims, on the terms that he should bear half the cost and give his services free in consideration of getting half the net profits.

The net result of the work of the year, during which an average of 12 men employed has been maintained, is that between 700 and 800 tons of ore were shipped to the Nelson smelter. The intention to last summer unwater the mine down to the 7th level, so as to admit of prospecting for ore between the 5th and 7th levels, was not carried out, but work was confined chiefly to taking out whatever ore could be found above the 5th level. A propect shaft was started on the Kootenay Bonanza and a depth of 35 ft., was reached before sinking was stopped for the winter. Ore was met with, but it is yet uncertain whether it will make into a permanent shoot or not.

Generally, while the year's work has not resulted in any new discovery of importance, the results were encouraging enough to determine Mr. Davys to continue his operations. If all goes well he will next summer carry out the proposal to unwater the mine down to the 7th level. The occurrence of a considerable quantity of good ore at the 5th level is regarded as promising for more being found below it, and this will be sought after. Work will be resumed in the prospect shaft on the Kootenay Bonanza, in the hope that more ore will be encountered as greater depth shall be reached.

Athabasca-Venus and Juno.—Work has been suspended on these properties. It was mentioned in last year's review, concerning the Athabasca-Venus that these mines were being worked under discouraging conditions, for notwithstanding that they were well and economically managed, and were stated to have paid more than working expenses, they were so loaded down with the debts of the two old companies whose liabilities, as well as whose property, the consolidated company took over, that there was little or no chance of much headway being made under these adverse circumstances. Eventually it was decided to place the company in liquidation, since which time no work has been done on the properties.

The Juno does not yet appear to be any nearer to putting in the stamp mill the intention to do which has several times been announced. No information was received as to what was done on the property during the earlier part of the year. Latterly the mine has been idle, and present prospects seem to be that it will continue so for a while.

Granite-Poorman—Good progress was made on this property during the year, with the result that the leassees, Messrs S. S. Fowler and M. S. Davys, report it to be looking quite as well as ever it did. The production for the year was about 2,800 tons of ore, the metal product from which was about 862 oz. gold and 400 oz. silver. Exact returns cannot be given, December product having to be estimated. The comparatively good results obtained, though not large, have had a decidedly beneficial effect in the direction of stimulating the prosecution of further prospecting on neighboring claims, several of which appear to be well worth extensive development.

Greenhorn.—No information was received relative to this property, which at the close of 1904 was regarded as a promising one, the ore then in sight occasionally showing gold.

Eureka.—This is regarded as a property of much merit, three veins being known to occur on it and the ore from the only one yet worked showing a width of 5 to 7 ft. and giving returns up to 10 per cent copper and $7 to $10 gold. Some 400 tons of ore were shipped, about 400 ft. of development work done, 30 by 50 ft. shaft house built, hoist boiler and pump put in, and all necessary arrangements made for continuing the work of opening up the property and shipping ore.

May and Jennie.—The Reliance Gold Mining & Milling Co., owning the May and Jennie group had a busy year. Not much new development work was done in 1905 for the sufficient reason that enough had been done in earlier years to open up ore equal to supplying a 50-ton mill with ore for two to three years. Attention was therefore concentrated on the work of completing the mill and cyaniding plant and of adapting the gold saving appliances to the particular conditions here existing. Now, however, that these matters are well advanced, further development is being proceeded with.

Stopes have been opened along the first 250 ft. of No. 1 tunnel. Beside increasing the quantity of ore broken down in the stopes the mine is producing some 50 tons daily. Including the foreman seven men are employed in the mine, the work including shoveling and tramming (aerial ropeway) to the mill 1700 ft. away. Stoping ground varies from 4 to 15 ft. About two-thirds of the ore is oxidised iron ore, and the remainder sulphides, schist, etc. Average values are about $4 per ton, with an occasional day's run up to $6 and even $7.

The equipment of the mill was completed during the year. The plant includes a 50-ton Chilian mill, Blake crusher, rolls, 12 ft. Hendryx agitator, cyanide tanks, etc. The mill was started in July, but it was found that the plant required considerable adjustment to make it suitable to the particular requirements of the ore occurring here. Additional plant had also to be obtained, so that the end of the year was reached before the plant was in shape to handle daily the full capacity of the mill. Additions to the cyanide plant included two large storage solution tanks, settlers, two decanting tanks, etc.

The practice at the Reliance mill is to grind the ore in a weak cyanide solution, using about half a pound of cyanide and two pounds of lime per ton of ore. It is claimed that this is the only mill of its kind in Canada; it uses a combination of milling and cyaniding in conjunction with which is the Hendryx electro-cyanide process. The mill manager, Mr. Douglas Lay, has applied himself assiduously to the task of adapting the combined process to the particular requirements of the May and Jennie ores, and the success achieved has been the result of his persistence and perseverance in this connection. It is believed by the management that the chief difficulties have been overcome and that the modified process now in use will admit of a sufficiently high recovery of the gold contents of the ore to justify the directors in giving early consideration to the proposal to increase the mill and plant to a daily capacity of 300 tons.

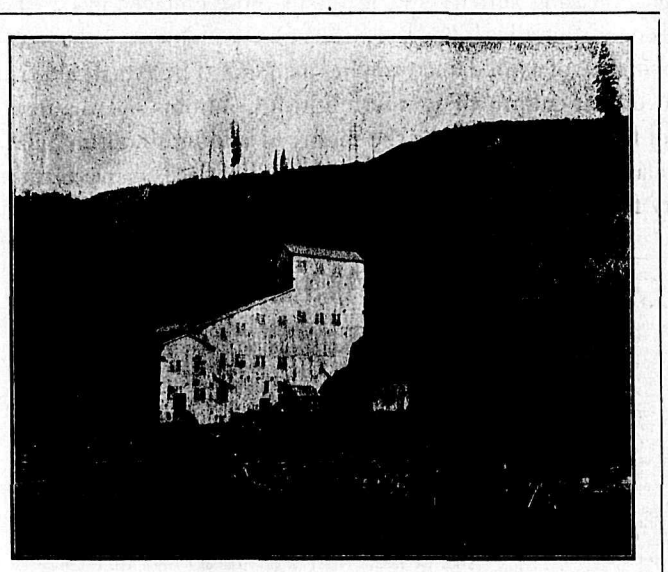
Pingree.—Late in 1905 the Pingree Mines, Ltd., was incorporated to acquire the Pingree group of six claims situated on 49 and Eagle creeks, near Nelson. The group is described as adjoining the Reliance Co.'s group, Eureka, and other well known properties. The prospectus issued gives no particulars of work done; apparently the group is little developed. Its situation, though, appears to be a good one, and the prospects favorable enough to warrant systematic development work.

Gold Hill and Referendum.—No particulars of the Gold Hill has been received. The Forty-Nine Creek Gold Mining Co.'s district representative came to Nelson from Rossland in November and stated that part of the machinery for a mill for the company's Referendum property, on 49-Creekfi had reached Nelson and would be taken up to its detination without delay. The buildings for this plant had already been completed. It was further stated that the property had been taken over by a company composed mainly of New York capitalists, and that all money necessary for operation was available. The early installation of the plant and the working of the claims was stated to be assured.

La Plata Mines (Molly Gibson).—The La Plata Mines Co., Ltd., was recently formed for the purpose of taking over the Molly Gibson Co.'s mine of that name and other assets. The new company paid the debts of the old, and raised an additional $70,000 for further development of the mine and its equipment with a suitable plant.

The Molly Gibson is situated on Kokanee creek, a few miles northeast of Nelson. The old company did a lot of prospecting work on two parallel veins of galena with a little quartz, the ore carrying good value, chiefly in silver. The new company, well satisfied with the results of development work, has been putting in a 75-ton concentrating plant, the construction of which was entrusted to Mr. Charles Culver, one of the most expert mill men in the district. Construction was commenced on October 4, and the installation of this plant is now well forward.

Other plant includes a 4-drill air compressor, electric light plant, saw mill, etc. The last mentioned is run by steam but water power will be used for the operation of the rest of the plant. The mill cut all the lumber needed for building purposes, expense being thus kept down. A dam has been constructed and a flume 2700 ft. long, with penstock, built. Water will be conveyed from the penstock through 550 ft. of piping to Pelton wheels. The aerial tramway has been repaired, and bunk house, office, dwelling house, blacksmith shop ore bins and other buildings erected, some of them at the mine and others at the lower terminal of the tramway. The wagon road to the landing on Kootenay lake was repaired at a cost of $1,265. Development work done in 1905 included 374 feet of raising and 1255 ft. of crosscutting and drifting, making the total footage of development work in the mine 4600 lin. ft.

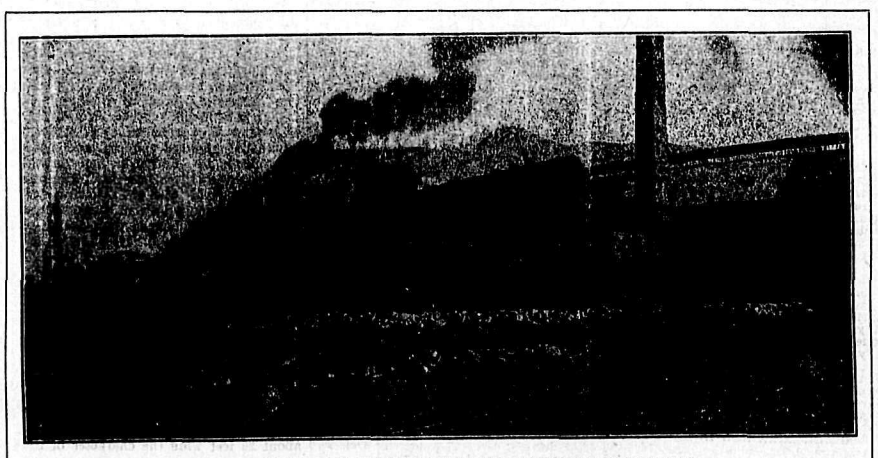


HIGHLAND CONCENTRATOR, AINSWORTH.

Ore, mostly taken out in the course of development, to the extent of 820 tons was shipped.

Capt. T. H. Trethewey is manager for the company, and recently the directors appointed and sent out to the mine his oldest son, Mr. W. J. Trethewey, in the capacity of assistant manager.

Crawford Creek.—The sale of the McMillan-Robinson iron properties, situated at the head of the east fork of Hooker creek, a tributary of Crawford creek, was announced some time since, and it was stated that it was the intention to establish an iron-making plant on Kootenay lake. A commencement has not, however, yet been made with this important work.



LE ROI MINING CO.'S SMELTING WORKS AT NORTHPORT, WASH.

La France Creek.—The La France Mining Co., of Chicago, Illinois, continued the development of its Bald Mountain claims, situated about 8 miles up La France creek, on the western side of Kootenay lake, between Pilot Bay and Kuskanook. Some 366 ft. of work was done and about 20 tons of ore taken out in the course of development was piled on the dump. Several buildings were erected, including bunkhouse, boarding house, blacksmith shop, stable, etc. A contract has been let for driving the lower drift tunnel 150 ft. farther, which will make it 450 ft. in length and should bring it under a surface showing of high grade ore. The ledge occurring on the property is described as a big one—containing from 20 to 100 ft. of concentrating ore and 1 to 3 ft. of clean ore, the latter giving values ranging up to more than $100 per ton in gold and silver. It is planned to construct an aerial tramway and put in a concentrating plant should the property continue to show up well under further development.

Alice.—The Alice mine, near Alice siding, east of Creston, on the Crow's Nest railway, is leased by the Alice Broughton Mining Co., Ltd., from the York & Lancaster Syndicate, an English company. During the year the manager, Capt. John Hampson, did about 900 ft. of development work and produced nearly 3500 tons of ore, the greater part of which was put through the concentrator at the mne. Concentrates produced totalled 506 tons. At the end of the year the customary temporary suspension of operations took place, the supply of water being usually too small for two or three winter months to allow of the concentrator being run. This plant has a capacity of 50 tons in 12 hours. A Riblet aerial tramway, 5300 ft. in length' conveys the ore from the mine to the concentrator, the plant in which consist of the customary coarse concentration appliances, viz, crusher and rolls, jigs, concentration tables, etc.

PORTAL OF RAMBLER-CARIBOO TUNNEL.

Bayonne Group.—The Bayonne Gold Mines, Ltd., did 695 lin. ft. of development work in 1905 on its Bayonne group on Summit creek, which flows into Kootenay river from the west about six miles south of Kootenay lake. The group consists of 10 claims, on two of which tunnels have been driven. The greater part of the year's development was in tunnelling.

YMIR

Leasing has come into fashion in the Ymir district during the past year and a large number of properties have been worked under lease, in some case with very good results to the lessees. Among other properties operated under lease are the Porto Rico, Tamarac, Arizona, Pilot, Fern, Yankee Girl, Cliff Kootenay Belle and Keystone.

The following is a summary of mining properties of the Ymir district:

HALL CREEK

The Fern mine was worked under lease for a part of 1905. Two cars of concentrates and one of high grade ore were shipped—to the value of about $10,000 in all. No work is being done on the property at the present time.

In the autumn the Ark Group Mining & Milling Co., was formed, to acquire the Ark group of eight claims situated on 16-Mile and Clearwater creeks, about eight miles east of the Nelson & Fort Sheppard railway. No particulars of the winter's work were received, but when the company was organized it was announced that it was intended to work through the winter, and in the spring instal a 5-stamp mill. Work had previously been carried on for more than a year, with five men employed at times. One tunnel had been driven about 230 ft, and from it a 20 ft. crosscut had been run. There are two veins on the property, with values chiefly in gold.

A start was made during the year to systematically work the beds of auriferous gravels on Hall creek. On the Myrtle hydraulic lease a 1500 ft. flume, and a pipe line of 1100 ft. of 10 in. pipe, carry water to a giant working under a 300 ft head. This plant was finished only just before the snow came, but a short test was made, and more than 40 cents per cu.yd. were saved, while much of the fine gld and all of the valuable black sand escaped. Next season tables will probably be installed to catch this sand, which occurs in large quantities on this ground and carries a high value in gold.

SALMON RIVER.

Very little information has been received regarding mining in this part of the district. The Porto Rico, under lease to G. H. Barnhardt, was sub-leased, and worked while the season was favorable.

The Gold Cup is idle, and there does not appear to have been anything done in its neighborhood.

WILD HORSE CANYON

The most striking event of the year in the mining industry of the Ymir district, is the important change in conditions at the Ymir mine. For about two years there had been little or nothing encouraging to report of this once profitable enterprise. Late this year, however, there has been much that is satisfactory of actual discovery and accomplishment, until now all doubt of permanency of operation is removed. The importance of this fact to the Ymir camp, and its influence on the mining industry of the province generally, can hardly be over-estimated, for on the London market the group of companies of which the Ymir Gold Mines, Ltd., is the best known, has always been considered representative of the conditions of mining in British Columbia.

The discovery of what appears to be an entirely new ore shoot was made in the 500 ft. level last September. Here, in the west drift, 5 ft. of $20 ore was met with. The present manager, Mr. E. M. Hand, conceived the theory that if the vein contained ore-shoots other than the original one, these would be found to the west of the present workings. This theory, although in antagonism to the expert theories upon which operations have been conducted during the last two years, was quickly justified by the discovery in the 500 ft. level, a discovery which was quickly followed by a similar one in the 600 ft. level west. So far about 60 ft. has been driven in the 500 ft. level, all in ore. The point at which the ore was encountered in the 600 ft. level is still 150 ft. east of the point at which it was discovered in the 500, proving a very considerable length for the new shoot.

Most important of all, however, is the discovery of what is believed to be the same shoot, in the 1000 ft, level west. The uncertainties of mining are seldom more plainly exemplified than in this instance. Two years ago, the then manager Mr. G. H. Barnhardt, was driving the same level when he received directions from his directors in London, to cease this work and confine his deep developments to driving east on the 1000 ft. level, consequently the east drift on this level had been driven more than 2000 ft. without any important result. After Mr. Hand obtained permission to drive west on this level, he commenced this work and had only driven a few feet when he reached pay-ore. This ore is still a long distance from a point directly beneath the discovery in the 500 ft. level, and should it prove continuous so far west, and up to the 500 ft. level, the shoot will give many year's mill supply. At the time of writing the mill is temporarily shut down, undergoing a thorough over-hauling, preparatory to starting up on the new reserves. The production for the whole year is not known but for 8 months it totaled 16,080 tons valued at nearly $80,000.

Wilcox.—The Broken Hill M. & D. Co. owning the Wilcox mine, went into liquidation last August. Stephen Bywater, the president of the company, is now operating the mine for the benefit of the creditors, as liquidator. This financial embarrassment will probably be of short duration, having been brought about by over-expenditure on new plant. The mine itself is looking well and ten days' run of the 10-stamp mill resulted in a brick worth more than $2000.

Foghorn.—Considerable work was done during the year, and a lot of ore was got out, which it was intended to have treated at the Wilcox, but this had not been done when the Wilcox company went into liquidation.

Pilot.—A shipment of ore was made to Trail, but the returns were reported to have been less than were looked for. An arrastra was put up, run by a Pelton wheel, but the water gave out. There is a lot of ore on the dump awaiting sufficient water for its treatment.

Commodore.—Only 55 ft. of work was done last season. It is planned to do a lot of development next season on a 12 ft. ledge, occurring near the Ymir Co.'s cyanide plant.

Arizona.—This adjoins the Wilcox. About 270 tons of ore were sent to the Wilcox mill, but the grade proved lower than expected. Ore is still being taken out. Two tunnels have been driven at different levels, both on the vein; the upper one is about 70 ft. and the lower 180 ft.

Tamarac.—This property was worked under lease and a car of ore was shipped to the smelter late in the year.

No reports were received of other claims in Wild Horse Canyon.

DUNDEE MOUNTAIN.

Dundee Group.—During the year fire destroyed the plant on this property. Only 50 ft. of work was done. Thos. Flynn leased the property for a time, and shipped two cars of ore than netted him $20 per ton. Arrangements are being made for a resumption of work next spring.

Yankee Girl.—The drift tunnel was extended and the pay shoot was caught below the bottom of the shaft, and a raise was made. Development work done totalled 260 feet., of which 60 ft. was raising. About 620 tons of ore were shipped to Nelson. In the autumn fire destroyed the mine buildings. A wagon road was constructed to the property, which is about two miles from Ymir. It is intended to again ship ore next season.

JUBILEE MOUNTAIN.

New York Central.—Some 165 ft. of tunneling has been done on No. 5 vein. No. 4 vein has been traced by prospect shafts and trenches about 500 ft. No. 1 vein has been opened by a series of open cuts for about 3000 ft. High assay returns have been obtained from ore from various places on the group. A trail and sleigh road connecting with the Dundee wagon road, were made last fall. Pending the result of negotiations for amalgamation with an adjoining group, operations have been stopped for the time.

Centre Star Group.—Cabins, bunk house and blacksmith shop were built, and a road made from the mine to Ymir. About 75 feet of development was done. Ore is being taken out for early shipment, there are 30 to 40 tons on the dump. Vein is large—about 12 ft., with a pay-streak 3 ft. in width. Values are about $35 per ton.

PORCUPINE CREEK.

Hunter V.—About the middle of the year the B. C. Standard Mining Co. leased the Hunter V. mine to the Hall Mining & Smelting Co. The latter company has since operated the property continuously, the shipments averaging about 1000 tons per month. The method of mining has undergone a change here, it having been found that the exposed situation of the property made the system of open quarrying impracticable. Underground mining is now the rule, therefore, and this system has resulted in the finding of what may be termed veins or pay-streaks. As is well known, the calcite ore of this property is an immense deposit of triangular shape, on the ridge of a mountain. Under existing conditions the whole of this deposit, although very low-grade, can be shipped at a profit to smelters which need it for lime flux. Recently, however, a number of streaks of quartz have been found in the lime and these streaks sometimes carry higher than average values in gold and silver. A number of cars of this class of ore have recently been shipped. At present the ore is all going to the Nelson smelter, although contracts have been made with the Marysville smelter, and the Canadian Metal Co.'s works to be shortly opened at Pilot Bay. In addition to the lessee company's work, the B. C. Standard Co. contemplates the simultaneous operation of diamond drills to thoroughly prove the extent of the ore deposits. The year's tonnage of ore shipped was 7047 tons.

SALMO.

Queen.—This is regarded as one of the best properties in the Ymir district. It is owned by Mr. Wm. Waldie, who last spring bought out the interests of his former partners. About 920 ft. of development work was done during the year, 630 ft. being crosscutting and drifting and 290 ft. sinking and raising. The output of ore was 6,100 tons, of which 124 tons were shipped as crude ore and the remainder put through the Yellowstone 10-stamp mill. The crude ore and 405 tons of concentrates were shipped to the smelter at Nelson. Returns were: From crude ore, $4840; bullion, $43,540; concentrates, $16,204; total, $64,584. A compressor and boiler house was built and an air compressor, boiler, hoist and pump installed.

Kootenay Belle.—This property was under bond part of the year to Mr. P. Clarke, of Spokane, but owing to some difficulty with the owners the bond was thrown up. It is at present being worked by Geo. Bell under lease. About 300 tons of high grade ore were taken out in 1905, and shipped to Trail smelter. The ore is stated to have averaged about $60 per ton. There are about 1000 tons of lower grade ore; this being shipped to the Yellowstone mill. A crosscut tunnel was driven during the year about 180 ft. cutting both ledges at from 80 to 100 ft. depth. A raise is now being made, to connect with a prospect shaft above.

Ore Hill.—This is under bond to some Oregon people, with Mr. A. D. Westby in charge. A two-stamp mill was run, but power being insufficient a large Pelton wheel had to be obtained. Ore is now being taken out and milled, and the property is reported to be looking well and devolping quite satisfactorily.

Mother Lode.—Just been bonded to San Francisco people. Ten men went up lately to prospect the property.

ERIE.

Arlington.—During the calendar year 1905, the Hastings (British Columbia) Exploration Syndicate, Ltd., of which Mr. Leslie Hill, of Nelson, is manager, mined about 1300 tons of ore which was shipped to the Nelson smelter. The metal contents of 1180 tons for which returns had been received were as follows: Gold, 3160 oz.; silver, 7432 oz.; lead, 93,803 lb. Average contents per ton were: Gold 2.685 oz.; silver, 6.3 oz.; lead, 80 lb. The company paid a dividend of one shilling per share, or a total of £3,018. 15s.

For the company's last financial year the manager reported: "During the year returns were received from the smelter on 1,128.75 tons of ore, the gross value of the contents being $66,140 and the net smelter returns, after deducting the cost of freight and treatment and the usual smelter deductions, $52,700.57. The average gross value was $58.60 per ton, and the average net smelter value, $46.70. Of this ore 112 tons shipped were taken from the Head Arlington workings, the average net smelter value of which was $45,30. These values were slightly higher than those obtained last year."

Regarding the future, the manager said: "The development of the new ground on the 77 ft. north level is of

great importance to the future of the mine as it opens up large possibilities. There is a large block of ground belonging to the company lying to the north of the present workings, and if the vein carried ore throughout the ground lying between the present stopes and the old Micawber workings, it will be seen that there is a large area of the vein to be developed."

Second Relief.—This property is owned by the Second Relief Mining Co., Ltd. It is located on the north fork of Salmon river, about 13 miles from Erie. The company operating it was incorporated in March last under the laws of British Clumbia for the purpose of acquiring the property from the Relief Gold Mining Co. The mill has been kept running steadily since the middle of April, making a profit above operating expenses of approximately $26,000 or about $3000 per month. Late development work in the mine has resulted very satisfactorily and a materially increased profit will be made during the coming year.

The mine is worked through three adits, the lower one giving a depth on the vein of about 400 ft. The ore consists of pyrrhotite in a quartz and greenstone gangue. There is sufficient ore blocked out on three sides to keep the mill running 4 to 5 years, and on two sides sufficient for several years more. The ore is conveyed to the mill by a gravity tramway 650 ft. in length. The plant consists of 10- stamp mill, with 9x15 in. Blake crusher, amalgamating plates, Wilfley tables, Frue vanners, and cyanide plant, (the latter not at present being operated), and 14-drill air compressor. The mill and compressor are driven by three Pelton waterwheels under a head of 190 ft., the water being brought in a flume a distance of nearly two miles.

The results of the year's work are as follows: Development work done, sinking and raising, 160 ft; crosscutting and drifting, 550 ft.; total, 710 ft. Ore produced, 5582 tons; shipped as crude ore, 22 tons; milled, 5560 tons; concentrates shipped, about 400 tons. The average yield of the ore in the mill has been about $10 gold per ton during 1905. Of the gold recovered, 75 per cent is by amalgamation, and 35 per cent in the concentrates.

Keystone.—Four men have been at work here at development, running a long tunnel. Only a little ore has been taken out, and but one car was shipped to the smelter.

Canadian King.—This property has been worked under lease. It is reported that it may be taken over by the company owning the Arlington.

Armstrong and Treasure Box Group.—The Transvaal-Zambesi Co., owning this group has granted a lease on it. Some rich silver ore has been taken out and the lessee has a carload ready to ship.

McEvoy.—Did a lot of work, chiefly sinking. No ore has been shipped.

AINSWORTH

Ainsworth division had more of its properties at work in 1905 than for several years. As, however, so few of those working them have responded to a request made for particulars of their operations during the year, not much information can here be given.

Highland.—Work was confined to the development of the upper levels, along the course of the vein, and was attended by encouraging results. A winze was sunk on the outcrop of the Josephine claim and the vein was proved to be 40 ft. wide and to contain a large and valuable ore shoot. No. 1 tunnel was extended 800 ft. from the old workings under this winze and disclosed a nice shoot of ore, in the same ground, at a depth of 300 ft. below the outcrop in which the winze was sunk. Drifting is being continued with increasing success, and the development of a large lode of ore is in progress. Beside this a new ore body was found outcropping 300 ft. north of the Highland vein. From this, when stripped, a quantity of clean galena was broken off a small section of the vein which ore was of a much higher grade than any hitherto found on the property. The outlook for the property is promising. The property is now under lease and bond to P. Burns & Co..

United.—This property has been taken over by the Canadian Metal Co., who have built a bunkhouse and cookhouse, put in hoisting machinery and a compressed air pipe line, and have been engaged in developing it.

The Highlander shipped some ore to Nelson, but no particulars have been received. Among other Ainsworth properties known to have been working are the No. 1 and the Krao, but nothing has been learned of their operations. The same comment applies to several other Ainsworth claims.

Woodbury Creek.—The operations of the King Solomon's Mining Co. in 1905 consisted only of incidental development work at the head of Woodbury creek, with encouraging results. It was mostly dead work, though, so of little public interest.

Blue Bell.—This well known mine—the first lode mine opened in the Kootenay—has been purchased by the Canadian Metal Co. Twenty men are now at work getting the property into shape for shipping ore. Ore bins have been erected, crushing machinery and a picking belt put in, bunk and cook houses erected, and a lot of preliminary work done. The intention is to ship ore from this property to the company's smelter at Pilot Bay.

South Fork of Kaslo Creek.—Similar lack of information exists in regard to this part of the Ainsworth division, the only property of which a few notes have been received being the Bismark, which worked but a small force of men. The owners, however, express themselves as being very well satisfied with the results of their seasons work, which included about 100 ft. of development. The mine is reported to be looking very well; its shipments for the past season totalled about 100 tons of ore which brought in satisfactory returns.

WHITEWATER

Whitewater.—This property is under lease to Mr. S. S. Fowler. It is looking very well at present. Production totalled 755 tons, of which about 500 tons were shipped as crude ore and 200 tons concentrated. Some 65 tons of concentrates were shipped. Not much development work was done—only 75 ft.

Whitewater Deep.—Messrs. Fowler and Retallack obtained a lease of this property quite lately. Previous to their taking hold of it no work was in progress on it.

Wellington.—Very little development was done, but 100 tons of zinc ore were shipped to the United States Zinc Co., at Pueblo, Colodado. The metal contents of this ore were: Zinc, 51 per cent; silver, 35 oz. per ton; lead, 3 per cent. The ore was nearly all taken from the old dumps.

Echo.—This is one of the groups in the district in which zinc ore of high grade is found side by side with galena. Development work was kept up but no ore was shipped last season.

Jackson.—The Jackson mill having been remodelled and largely extended, so as to make a separate zinc, as well as lead, product, it was run during 1905 long enough to make about 1200 tons of zinc concentrates. This requiring further treatment, by a zinc separator, arrangements were made to send it to the Kootenay Ore Co.'s works at Kaslo, where the installation of a zinc separation plant was approaching completion. Meanwhile work at the Jackson mill was stopped. The Kootenay Ore Co.'s plant was afterwards completed, and the results of its work on the Jackson zinc concentrates proved highly satisfactory. These concentrates are, therefore now being treated at Kaslo. Early next spring the Jackson mill will be started up again to continue production. Although the lead ore in the Jackson mine was not separately worked in 1905, the object being to get out zinc ore only until such time as production of that class of ore shall have been successfully established, about 250 tons of galena ore were produced while working with the zinc.

General.—It may be of interest to here note that the economical treatment of such ores as those of galena occurring side by side with zinc is largely dependent upon a better market for zinc and better facilities for preparing zinc ores for market than have heretofore obtained in this district. However, the excellent work done by the Zinc Commission, appointed by the dominion government, during the autumn, and the increasing attention the zinc situation is receiving, will together, assist in greatly improving the position for 1906

BEAR LAKE

There are several small properties in ths neighborhood that have made occasional carload shipments of ore of high grade, among them the Empress and Silver Glance. The Jo Jo, at the headwaters of the north fork of Carpenter creek is another claim that appears to be in a similar dry ore belt, in which shoots of ore containing very high values are sometimes met with. The operation on these several properties are not extensive, but when a shoot of rich ore is encountered, handsome returns are obtained, which knowledge encourages the owners to endeavor to find such rich bunches.

LOCAL MINING STOCKS

GENERAL ADVANCE IN VALUES IS SHOWN DURING YEAR

NELSON'S POSITION AS CENTER OF INDUSTRY ESTABLISHED

The year 1905 has seen the business of stock broking, not exactly originated in Nelson, but greatly extended and placed upon a permanent footing. Activity in mining of all kinds in the districts around Nelson, from southwestern Alberta to the Similkameen, has made the establishment of a mining exchange at a central place, like Nelson, if not necessary, at least very desirable. The quotations of such stocks by Nelson brokers have come to be regarded as reliable by shareholders and investors at the coast and in the east.

On the whole the year has been a profitable one for both investors and brokers.

All stocks, mining, coal, oil and industrials of British Columbia and Alberta, with very few exceptions show a very decided advance for the past 12 months, and Nelson, a town that was not considered a good point for brokers, even in the boom times, is now looked to as the headquarters for all these stocks and is considered by eastern investors as the best point from which to get reliable information and quotation. Among the securities that have shown the most activity, the copper stocks of the Boundary seem to take the front rank. With Granby Consolidated, which was selling around $5 a year ago, now selling around $10, after paying $450,000 in dividends, it is easily understood how the small companies have been able to raise capital by selling treasury shares. If the present price of copper continues, the copper stocks of the Boundary will prove very attractive investments.

In Alberta there are the new oil and coal companies' stocks, that a year ago were being offered at 10 cents and coal stocks that could have been bought at 20 cents, now demand 25 and 35 cents

The stock of the silver lead companies of the Sloan are not so active as those which have been mentioned but it is expected that dividends of these companies will greatly increase this year and the shares now show an upward tendency. The quarterly dividend of the St Eugene, which amounts to about $70,000, has had a tendency to strengthen the market for all silver-lead stocks

Among the gold stocks the Ymir Mines and all the stocks of the Rossland camp show a good increase

HOME FOR NEW YEAR

Lord Strathcona and Mount Royal Returns to Canada

New York, Dec. 31—The steamer Campania arrived this evening from Liverpool and Queenstown after an unusually rough passage of seven days, eight hours and thirty minutes. During the whole passage the campania experienced strong to fresh northwest gales with heavy seas and violent squalls. Among the saloon passengers was lord Strathcona.

There is no smoke to equal
Union Made
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REVELSTOKE AND KAMLOOPS

But Little Progress Made During the Past Year--Iron Mask's Sixty-Ton Blast Smelter First of Kind to be Erected in the Province

But little information has been obtained relative to mining in the Revelstoke and Illecillewaet divisions or around Kamloops and Ashcroft. Of placer mining in the Big Bend country all that has been ascertained is that gravel has been washed on Camp, French and McCullough creeks. In Standard Basin the Prince Mining & Development Co. has been opening up bodies of copper ore, respecting which some notes are given below. The Lanark mine, Illecillewaet, some years ago operated by an English company which is stated to have taken out of it about $200,000 worth of ore, was during 1905 bonded by a Revelstoke syndicate with a view to its development.

Concerning the Standard mine, the following is an excerpt from a published letter from colonel Steele, a Denver, Colorado, mining engineer who about the end of last August visited the property for the purpose of making a report on it. He wrote: "I desire to give you briefly, in the form of a letter, my impression of the property owned by the Prince Mining & Development Co. The surface indications, the vein outcroppings, and the developments already made, demonstrate to my mind the existence of immense ore bodies. I have no hesitation in expressing my conviction that each of the six veins crossing the property parallel to the Standard vein, and showing throughout their length remarkable strenth, will, upon development, reveal ore bodies similar in size and richness to those already disclosed in the Standard vein. The cross veins upon the property, I am confident, can be relied upon to produce ore." From another source it is learned that during the past year the company has disclosed immense bodies of copper ore or good grade. A depth of 550 feet on the lead has been reached, this being on the lowest level, while a drift has been run for more than 300 ft. At two different points— one at the 550 ft. and the other at the 400 ft level, —crosscuts have been made in ore, which at one place is 25 ft. wide and at the other 22 1-2 ft. The extension of the drifts is being continued in order to further develop the large bodies of ore described as occurring here. The company is planning to install a power plant to handle the ore as soon as it can make arrangements for doing so.

Mining in the Kamloops district has not made rapid strides during the past season and, but for what has been done in connection with the Iron Mask, little but assessment work has been carried on. The one exception is the development of what is now the Rising Sun, a restaked property on which a promising vein has been recently found by the new locators. A car load of ore has just been shipped to the Tyee smelter but no returns have yet been received. It is, however, a low grade ore.

The most important move at the Iron Mask has been the inauguration of the 60-ton hot blast smelter, the first of the type to be erected in the province and which is now, after a few drawbacks at the outset, working like a charm. It is a test smelter and as two of the directors of the company spent some weeks in the camp, carefully investigating the probable ore production of the camp as at present indicated, color is given the unofficial statement that it is the purpose of the company to build a large smelter of the same type during the season of 1906.

Both development work and stoping are being carried on in this mine and a large proportion of the ore is being taken from the Erin, a bonded claim adjoining the Iron Mask, held by Kamloops parties. When the Iron Mask people took hold of the Erin a good deal of development work had already been done and a first class showing of oxides carbonates and solid ore exposed. This is now improving and the property is one of the most promising in the camp. The report of the visiting directors is being awaited with interest as the future of the camp is materially associated with the progress of the Iron Mask, capital waiting for some definite official announcement before embarking on other prospects.

The molybdenum deposits at Highland valley, between Ashcroft and Spence's Bridge, have not turned out as well as expected even a few weeks ago. A large sum of money has been spent this year in development and a few weeks ago a shipment of ore was made to New York but the results were so disproportionate to expectations that the owners may abandon any idea of further prosecuting the work begun. The copper properties, however, in the same district are more promising and although nothing but development work is being done it is expected that one at least of the properties will become a shipper this spring.

Transvaal Group.—The Transvaal group of six claims is situated in Highland Valley about 26 miles southeasterly from Ashcroft, and at an elevation of about 5000 feet. The owners are Messrs. George J. Novak, James Hosking and William Knight, of Rossland, B.C..

Mr. J. M. Turnbull of Trail, has a working bond on the property, obtained through Mr. Smith Curtis of Rossland. The terms of the bond have not yet been made public. Active development, with a crew of 20 men under the supervision of Mr. A. W. Davis has been in progress since the 16th of September last.

A large number of showings are exposed on these claims by means of open cuts, the ore consisting mostly of dark silicious rock carrying abundant iron oxide with silicates and carbonates of copper. The covering of wash prevents the tracing on the surface of any one lead for more than a short distance. A two compartment shaft is being sunk in the most mineralized part of the property. The country rock consists of much shattered and decomposed granite with occasional sprinklings of oxidized copper ore. On November 20 the shaft had reached a depth of 110 feet; native copper had begun to occur, and the rock was found to be harder. Hoisting machinery is being installed, to replace the horse whim heretofore in use. The shaft will be deepened to water level, which is expected to be at a depth of between 200 and 300 feet. Crosscutting is in progress at the 110 ft. level crosscuts will also be run at the 200 and 300 ft. levels. It is hoped that good ore will be met with below the decomposed zone. A 200 ft. tunnel, intended to tap some good surface showings at depth, has been driven 75 ft., and is being continued. On November 20 there was one foot of good oxidized ore in the face. The chief values of the Transvaal ore are in copper, the gold and silver values being small as yet.

Development work will be continued throughout the winter, with about 20 men, Mr. James Hosking acting as mine superintendent.

The Iowa gold dredge at Lillooet is reaping a comfortable harvest from the bars near that little burg and were the machinery strong enough to resist the strains put upon it and thus obviate frequent shutting down for repairs the owners would be making a most excellent thing of it. As it is they are doing very nicely. Faulty construction of the dredges at Lytton which caused their being shut down the greater part of the time last year has had the same effect during the past season. This is unfortunate but is entirely the fault of the shareholders in not insisting on the work being entrusted to competent, experienced hands.

East of Kamloops the discovery of an enormous vein of galena in the mountains forming the divide between the Shuswap lake basin and that of the Columbia river at Big Bend is one of the notable events of the year. The vein is traceable on the surface for several miles and has a width varying from three to twelve feet of solid ore. The discovery caused considerable excitement at the time and scores of claims were staked, many, as usual, on valueless ground. A large group of the claims first located was bonded for a quarter of a million a few weeks after the staking was done. The properties are reached by way of the Seymour Arm of Shuswap lake.

POPLAR CREEK

The Great Northern Mines, Ltd., owning the Lucky Jack and Swede group, have at length settled their disputes in the courts and are in undisputed possession of the claims, which are now crown granted. The share holders have decided to issue $200,000 worth of debentures, half of which have been subscribed for, and in the spring the property will be opened up and operated continuously.

Little work has been done during the past 12 months but there had been done earlier a large amount of open cutting, two tunnels aggregating 240 feet have been driven and they are now ready to supply a stamp mill with ore.

The owners of the Mother Lode, higher up Poplar creek, have been busy driving two tunnels and are now engaged in driving one lower down the hill, to tap the lead at greater depth, so as to facilitate stoping and cheapen the cost of production. This property is owned by the Laclede Mining company.

The Mother Lode No. 2 and three adjacent claims just east of the Mother Lode, have been bonded to an official of the C.P.R., and will be thoroughly examined during the coming spring.

The Spyglass has had no work done on it during 1905, as the company owning it is arranging for a wagon road to take in machinery. Meanwhile no more hand work will be done.

The Marquis & Gilbert group of claims, Gold Park, Ophir and Achre, have had considerable development work done, in the way of open cuts, tunnels and shafts, but are now shut down till spring.

The Hampton group has been worked during the year, two tunnels having been driven for a distance of 175 feet and the ore, gold quartz, tapped in the old lower one. Work has been suspended for the year.

The Lidie group, consisting of the Lidie, Golden Chest No. 2, Ditto fraction, Independence, Nashville and Golden Cross, has has many open cuts put in, two tunnels driven and three miles of trail built, and good log cabin and blacksmith shop. Good gold quartz has been struck averaging from $2.95 to $9.55. Work has been suspended pending the erection of a small experimental mill to save the gold in the quartz now going over the dump.

During the year a large amount of assessment work has been done throughout the district, an unusual number of claims have been surveyed for crown grants and very few claims have been permitted to run out. Notwithstanding all the showings and the work done, no capital has found its way into the camp during the year. More than twice the amount or work was done during 1905 than there was during 1904, as it has been realized that depth and ore at depth, must be exposed before satisfactory sales can be made.

A special feature of this year has been the lower and more reasonable prices and terms asked by the prospectors for their claims which will produce its proper effect in the near future.

On Rapid creek the Schmidt & Rogers' group has had considerable attention from its owners and the tunnel has been extended for some distance. They now have about 600 feet of work done on the quartz veins.

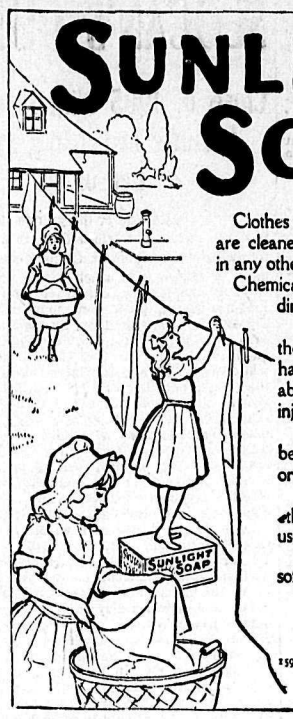
The Calumet and Hecla has had a shaft sunk 57 feet, and the vein has been crosscut by two short tunnels on each side of the shaft. Free gold has been washed from the quartz and the work was only stopped for want of a good pump to keep the workings clear of water. This is now being taken in hand and it is to be hoper that this fine property will soon be working and have a mill to extract the gold.

On all these properties, although rich for milling, it has been found that the ores cannot be shipped at a profit, but must be treated on the ground, as indeed must all other free gold mines, and now that this is fully realized we may expect proper results from proper treatment in the near future.

ANNUAL BALL

The second annual dance given by the members of Queen City Rebekah lodge No. 16, I.O.O.F., will take place in Fraternity hall this evening. The ladies have a reputation to sustain as hostesses and have made ample preparations to excell all previous records.

SUNLIGHT SOAP



Clothes washed by Sunlight Soap are cleaner and whiter than if washed in any other way.

Chemicals in soap may remove the dirt but always injure the fabric.

Sunlight Soap will not injure the most dainty lace or the hands that use it, because it is absolutely pure and contains no injurious chemicals.

Sunlight Soap should always be used as directed. No boiling or hard rubbing is necessary.

Sunlight Soap is better than other soap, but is best when used in the Sunlight way.

Equally good with hard or soft water

$5,000 REWARD will be paid to any person who proves that Sunlight Soap contains any injurious chemicals or any form of adulteration.

159 Lever Brothers Limited, Toronto

YEAR'S SCHOOL TRIUMPHS

NELSON PUBLIC AND HIGH SCHOOLS LEAD THE PROVINCE

EXCELLENT PROGRESS IN NUMBERS AND EFFICIENCY

No institution of the city has achieved more signal triumphs, nor made such substantial progress during the year, as the public and high schools.

An effort early in the year to secure buildings more nearly in keeping with the city's position and repute as an educational centre, failed from a combination of circumstances, and teachers and pupils were forced to work on for some time longer in unsatisfactory quarters. But the surroundings have not been suffered to impair the character of the work done.

The chief tests of proficiency during the year are the examinations conducted by the provincial education department in June and July. The first was the examination of public school pupils for entrance to high schools. Phincipal Sullivan prepared 22 candidates and all were successful, setting a new record for the schools of the province. The triumph was further distinguished by the circumstance that the pupils who stood first and second in Nelson were also first and second in the province. As Nelson public school's attainment of the first position in the province was the fifth in succession, its precedence is practically established.

A few days later the friends of public education in Nelson were again delighted by the news from Victoria that the high school had almost matched the achievement of the junior institution, easily taking first place in the province, with 14 cut of 15 candidates successful.

Once again a competition of schools was invited in a special department of work which had not been long established in Nelson. The directors of the Dominion Fair held at New Westminster, offered prizes for many varieties of pupils' work. Entries were received from about 20 city schools and many town and rural schools, Nelson won first prize in every department in which it entered, and a special prize for general proficiency.

During the year the enrollment at the schools has increased from about 350 to over 400, and the regularity of attendance has also been greatly improved.

FERNIE MAKES PROGRESS

PRACTICALLY REBUILT IN THE PAST TWELVE MONTHS

NOW POSSESSES MANY HANDSOME AND COSTLY BUILDINGS

(Special to The Daily News)

Fernie, Dec. 31—The year 1905 has witnessed many changes in the city of Fernie. Previous to the big fire its general appearance was that of many other frontier towns. Buildings of all sizes and shapes, with no pretensions to architecture had been thrown up in one long street, where residences and shops lay in confused juxtaposition, the principal object of the early builder being to get a structure erected as speedily as possible in which to do his bushes. With the exception of hotels there were few if any two storey buildings. Fire is at all times a great calamity, but the fire which swept Fernie two years ago was the means of transforming an irregularly built frontier town into a more modernly built city, which imparts to the eye of the visitor an idea of thrift and stability combined with capital, which it did not do before. This year has been a very busy one in the building line. During the summer, go to what part of the city you liked, the noise of hammer and saw was constantly in your ears. Unlike the generality of coal mining towns in the west, the newly erected buildings are all of a neat and substantial appearance. Be they large or small they all have the appearance of neat architectural design, combined with an impression of comfort. The expansion of Fernie has been marked, being, with the exception of the east side, of a uniform character. Business blocks on the main street have been of a most imposing and substantial character, involving the expenditure of a considerable amount of money and which are likewise an infallible indices of the confidence of the investors in the city of Fernie as a business centre for the present and future. Considerable stimulus was given to investments in real estate by the speech of Mr. Lindsey, the general manager of the coal company, on the occasion of laying the foundation stone of the new offices last spring. On that occasion the general manager in glowing terms, predicted a great future for Fernie; going so far as to say that it would in time be the industrial and commercial centre of the Kootenays.

The building operations and improvements for the past year represent approximately an expenditure of about $500,000. The following are some of the buildings erected during the year:

Elk Lumber & Mfg. Co., mill	$75,000
C. N. P. Coal Co.'s offices	30,000
Trites-Wood Co.'s stores	30,000
Henderson block	20,000
Crow's Nest Trading Co.'s store	19,000
Northern hotel	15,000
Queen's hotel	15,000
Smaller stores and residences	75,000
Buildings in West Fernie	20,000
Buildings in Fernie Annex	5,000
In northern part of city	8,000
Telephone extension	6,000

The fire which swept Fernie 20 months ago removed the major portion of the wooden structures which constituted the business portion of main street. This year a second and third fire completed the removal of the remaining wooden structures, the product of early business enterprise. The council having passed a fire limit bylaw all of the structures which have been erected on the main street of the city have been mostly of brick or stone and fire proof.

In addition to the large number of buildings erected during the year the corporation has expended $6000 in local improvements nearly all constructed in the laying of sidewalks. The council likewise voted $5000 for a new fire hall and necessary apparatus for the use of the fire brigade. Alderman Tuttle, who has taken a great deal of interest in the formation of a fire brigade, was by the council, of which he is a member, appointed chief, and a permanent assistant chief, with a salary attached was also appointed. A fire brigade has been formed who receive pay when on actual service or when they turn out for drill. This organization is the most important force in the city and will no doubt render valuable service in preventing a repitition of former disastrous fires.

The expenditure of the coal company in additional water supply has been very large, in the vicinity of $25,000.

The council has now placed upon the market $40,000 worth of debentures for sewerage purposes. No city aspiring to the name of city is worthy of the name which has not a wisely laid out and carefully planned sewerage system. That the citizens of Fernie realize this fact was evidenced by the decisive vote which they gave when the question of "sewers or no sewers" was left to their decision.

Altogether 1905 has been a most prosperous year for Fernie and in the expansion of her trade in lumber and other commodities, as well as coal and coke, the outlook is very bright.

The lighting of the city is the next important question which will engage the attention of next year's council.

Fernie is indebted to the retiring mayor and council for much of the progress that has been made during the year. Many knotty questions came before them and were dealt with in a sound, common sense and business manner. The position of mayor or alderman is one which is subject to much criticism and very often of an unjust character. Mayor Stork and the outgoing council can look back with conscientious satisfaction on the work done by them in the interests of the city of Fernie during the year 1905. "By their works ye shall know them."

MUSIC AND DRAMA

Nelson is proverbially a good show town for all meritorious performances. Last year during his lease of the opera house, W H. Cranston painted and brightened up the interior of the Nelson opera house and added a lot of fresh scenery and the Nelson operatic society also added some stock scenery. Harold Nelon, the Roscian opera company and a lot of minor productions appeared, but the best performances of the year were those given by local amateurs. The Nelson operatic society presented the comic opera Erminie with the greatest success. Particular attention was given to all details and the chorus and orchestra as well as the soloists well deserved the praise that was lavished upon them. For the coming year the society have in preparation the production of The Gondoliers. The Nelson choral society rendered the cantata Rose Maiden, very successfully and propose to give Handel's Creation early in this year. The Lilliputian production of Pinafore, by the children of the city at the close of the year was an unique and excellent performance, well worthy of repetition this year.

Band music and plenty of it is always an attraction, and the efforts of the city band during the past year won golden opinions from all who heard them. The open air street and park concerts during the summer were very enjoyable and attracted large audiences. During 1906 the number of musicians in the band should be doubled and the number of open air concerts should be still further increased. To accomplish this a public grant is necessary and should be forthcoming.

MUSSEN & Co's MINING MACHINERY, MONTREAL

See Advertisement in Section One.

W. H. C. MUSSEN & CO., MONTREAL

Maple Leaf Rubbers

Best to Sell

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Best to Wear

Styles to cover every need from fine city wear to lumbermen's or miners' footwear. They are all just as honest as the emblem signifies.

J. Leckie Co., Limited

Vancouver, B. C.

Selling Agents

There's one—and only one—sure test of unshrinkable underwear—that is the wash tub. It's the test that "Stanfield's Unshrinkable" stands—not once, but all winter long.

Stanfield's Unshrinkable Underwear

is absolutely unshrinkable. We guarantee it—and best dealers everywhere sell it.

Your Safeguard

When buying Overalls see that they bear this label. It is a guarantee of their quality.

Overalls bearing the "Buck Brand" are Union made, by your own countrymen, and as nearly indestructable as its possible to make them. They are manufactured by the pioneer workingmen's outfitters of the west. Men who know western conditions and requirements from having lived the life of the westerner. Ask for the "Buck Brand" Overalls and take no other.

Wm. J. McMaster & Sons, Ld

MANUFACTURERS

VANCOUVER.

1905-1906

On the first day of the New Year The Daily News again presents its readers with a review of the mining industry of the year just closed. We believe it will be found that every phase of this all important subject has been dealt with in a fairly comprehensive manner. The story told is one that cannot fail to prove of absorbing interest to those of our readers who wish to keep thoroughly abreast of the progress that is being made in the development of the mineral wealth of this province, and who among the thousands that will receive this annual number is not deeply interested in the welfare of the industry that makes British Columbia the richest portion of our fair dominion?

The past year saw a new high record of mineral production established. The record of 1901 has been eclipsed by nearly $1,000,000. Moreover, the closing months of the past year witnessed what we firmly believe to be a permanent improvement in mining conditions, due to a variety of causes dealt with fully elsewhere.

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We do not purpose commenting here at any length upon the mining situation. So far as circumstances and the limitations of space would permit, the subject is covered in all its aspects in the several sections of this number. Our readers can rest assured that no pains have been spared to secure reliable data and that the utmost care has been taken to guard against extravagant statements. The aim of this annual review is to convey to the world an authentic report of mining conditions in British Columbia. We think we can fairly claim that this end has been achieved and that no one who reads what is here compiled concerning the mines and smelters of this province will be misled in any essential particular. There is no occasion for exaggeration. The facts suffice to establish British Columbia's pre-eminence in mineral resources and the more widely the actual facts become known the more surely and speedily will the necessary capital for the development of these resources be obtained.

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Whilst the main feature of this number is the review of the mining industry it will be found that attention has been paid to the lumbering and fruit growing industries. Here again the story told is one that affords good grounds for optimistic predictions for the prosperity of southern British Columbia. The rapid strides made in the fruit industry are specially noteworthy, indicating as they do a source of permanent wealth production that a few years ago would have been scoffed at.

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Another feature of this number which will well repay careful consideration is the series of interviews with local bankers, manufacturers, wholesale merchants, and real estate agents. They tell of business conditions as they found them in the past year and speak of the prospects for 1906 in the light of this experience. Without exception, the gentlemen interviewed express satisfaction with the results of the past year's business and take a very hopeful view of the outlook for the ensuing twelve months.

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The Daily News hopes that this annual review number will assist in some small measure to make British Columbia better known and its varied resources more adequately appreciated both at home and abroad.

NELSON'S NEWS OF THE DAY

The regular meeting of the city council will be held in the city hall tomorrow, Tuesday, morning at 10:30.

If the hockey players leave any ice at the rink this afternoon it will be open for skating this evening at 8 o'clock.

Alderman Malone's supporters will meet in their committee rooms tomorrow evening to select candidates for the council.

Mrs. Rasm has had to postpone the organization of her musical kindergarten class until the second week in January on account of illness.

New Year's day being a dominion holiday the general delivery wicket at the post office will be open this morning for two hours only, from 10 a.m. to noon.

A short New Year's thanksgiving service will be held in the hall of St. Paul's church this morning at 11 o'clock. Those new rooms lately added to the Sunday school building will be dedicated.

A banana lunch and musical concert will be given in the Salvation army barracks this evening, as a social feature of the two months' campaign of revival inaugurated last evenin gby captain Quaife.

The first annual ball by the officers and men of No. 2 company, R.M.R., will be given in the armory this evening. The big hall has been elaborately decorated by the men of war as a proof of their skill in some of the arts of peace.

A sleighing party met with an unfortunate accident on the Granite road yesterday afternoon. Mr. Hutton was driving when, within a mile and a half of the city on the return trip, on a straight road with no visible obstacles, the sleigh unaccountably overturned. Two ladies in the party were injured, one seriously. The sleigh was also slightly damaged.

The hopes of the curlers rose as the mercury declined yesterday afternoon. It was at first intended to formally open the season at 2 o'clock in the afternoon, but last evening several engagements were made for matches this morning. All four sheets of ice are in splendid condition. Nelson curlers are already a couple of weeks behind those of Rossland, Sandon, Phoenix and Greenwood, and will have to get in some hard and regular practice if they hope to bring back any cups from the Rossland bonspiel.

A New Year's turkey shoot will be held today beginning at 9 a.m. below the smelter hill. Everybody is invited.

The watch night service held last night in St. Saviour's church and the Salvation Army barracks were well attended.

The first hockey match of the season will be played at the Nelson rink this afternoon at 3 o'clock between the Nelson and Rossland senior teams.

Frederick Stuart McDonald and Miss Grace Evelyn Sherraden were married at Ainsworth yesterday morning. They arrived in Nelson last night and are at the Hume.

N. L. McInnes, J. H. Fox, C. D. Blackwood and W. A. Thurman, the "Big Four," returned from Rossland last night. They played three curling matches against rinks skipped by F. W. Pretty, T. I. Dunn, and Dr. Kenning, winning one, losing one and drawing one. They brought back the historic White Horse trophy, and the McCallum erfection trophy. They are enthusiastic in their expressions of appreciation of the magnificent hospitality extended by the Rossland curlers.

Many of our subscribers will probably want extra copies of today's issue to send to friends in the east or the old country. Provision has been made for those who are dilatory about sending in orders, but the available number of copies for sale is limited and orders should be sent in promptly. So long as the reserve lasts, orders will be filled as received. Cash should accompany all orders, the price per copy being 10 cents.

NELSON'S POWER PLANT

CITY'S GREATEST ENTERPRISE IS NEARING COMPLETION

STORY OF PERSISTENT EFFORT FOR ECONOMIC INDEPENDENCE

The most notable fact in the history of Nelson as a city during the year 1905 was the beginning of the construction of a municipally owned power plant on Kootenay river at the upper Bonnington falls on the south side of Kootenay river. The history of the enterprise dates back to the year 1900 when Dr. G. A. B. Hall, then a representative for the east ward in the city council, moved that the city secure a site for a power plant and begin its construction as soon as possible. The resolution was unanimously adopted but for some time no action was taken.

The first bylaw to raise money by debentures for the construction of the plant failed to secure the required majority. After a short campaign a second bylaw was submitted and carried. In 1902 the site was recorded for the city by John Houston, representing Nelson in the provincial legislature, after a claim to the ground as a mineral claim had been set aside. For two years the financial depression in British Columbia and the consequent caution of eastern capitalists, prevented the sale of debentures. Towards the end of 1904 an offer was received but was declined, a majority of the council considering the price offered too low.

With the restoration of confidence in 1905, and the friendly offices of a local bank manager, J. W. Banfield, a favorable offer was received and accepted early in the year, and the construction of the plant was at last a possibility.

Then began a legal campaign with the West Kootenay Power & Light company, which was about to construct a new and larger plant on the north side of the river at the upper Bonnington falls, to take the place of their original plant at the lower falls. After numerous hearings by water commissioners and by the executive council of the province, the city's plans, as drawn by the city engineer and approved by Clemens Herschel of New York, an hydraulic expert of continental repute, were approved and sanctioned.

The sum available for construction was $147,150, which was at first thought to be sufficient for all purposes. The work of excavation was begun by D. McBeath and company. It had not proceeded very far when legal proceedings were instituted by the West Kootenay Power & Light company to restrain the contractors and the city from depositing rock and debris in Kootenay river to the alleged detriment of the company's vested rights at the lower falls.

The company was granted an interim injunction until July 12. After the hearing of argument in Nelson on that date, judgment was delayed for several weeks, and finally at the end of July the injunction was made permanent.

The result was to greatly retard the work of the contractors and to increase the cost of work, besides making the city liable for all costs of litigation.

An appeal was made to the full court by the city. Meanwhile the work went on slowly as necessitated by the altered circumstances. Two separate attempts at compromise, first with the company's manager, L. A. Campbell, then with the president, W. M. Doull, were made and abandoned. The delay forced by the litigation had caused inconvenience and loss to the contracting companies on the excavation and on the erection of the pole line from the plant to the city. Both contracts have been assumed by the city and work is now proceeding as rapidly as possible under the direction of the city engineer and the supervision of the acting mayor. The present position of the work, as recently outlined by the acting mayor, is that about three fourths of the canal excavation is completed, excavation for the wheel pit and tail race and construction of the coffer dam and protecting crib have begun. Every particle of rock excavated from below high water mark is being deposited above high water mark as enjoined by the court. The pole line is completed from the plant to the western limi of the city. All the machinery required to complete the work of construction is on the ground.

Even under the present restrictions that the work must be carried on, those in charge are confident that it can be completed before the season of high water of 1906. On a preliminary hearing of the city's appeal by the full court permission was obtained to submit new evidence in support of the city's contentions. The final hearing of the appeal will take place on Jan. 9th, 1906. If the city should succeed, all difficulty will be at an end, and a large amount, $6000, paid in costs, will be recovered. If it should fail, the work can still be carried to a successful issue, at a cost above the proceeds of the debentures estimated at a little less than $20,000.

In any event there seems to be good ground for the expectation that by the middle of 1906, Nelson will be enjoying a satisfactory service of light and power from her own power plant and will be economically independent of any corporation.

HEAVY NORTH ATLANTIC GALE

Queenstown, Ireland, Dec. 31.—A firece gale has been blowing off Queenstown since last night, accompanied by a terrible sea. The Cunard line turbine steamer Carmania, arrived off the port at 7 o'clock this morning, but she was obliged to ride out the gale off Daunt rock lightship, and must remain outside till tomorrow morning. A heavy mail and 20 passengers are awaiting the Carmania which sailed from Liverpool for New York and was due to leave Queenstown today.

SLOCAN'S OUTLOOK BRIGHT FOR NEW YEAR

Close of 1905 Witnessed Revival of Activity and With High Prices of Metals, Advance in Leasing System and Profitable Market for Zinc There is Every Reason to Anticipate That 1906 Will Prove a Record Year

Among the features of the year in the Slocan particularly worth noting are the following: The Rambler Cariboo company continued with much energy the work of driving the deep-level tunnel that has been in progress for more than a year. The Lucky Jim and Slocan Star each produced comparatively large quantities of zinc ore or concentrate, while the Ruth did a fair share towards the total production for 1905, which, by the way, has been estimated at more than 13,000 tons. The leasing system made some advance, a prominent instance of its adoption having been the renewed leasing of the Payne mine. Of several mining suits that had been before the law courts for years some were disposed of and others advanced a stage in the tedious course over which such cases usually run. Dividends were paid by some of the mining companies or partnerships, prominent among them being the Lucky Jim, Slocan Star and Reco, each of which may be expected to again divide realised profits in 1906. About Silverton three or four leased properties did well, encouraging the leasing of others. In the Slocan City division mining matters were generally quiet, though, there were individual properties that continued to do well, notably the Ottawa. On the whole the Slocan district showed that mining is still alive within its boundaries, and that despit a depression which has extended over several years, it is making progress—even if but slowly. Probably the report of the Zinc Commission will do much towards stirring up fresh interest in its mines and lead to its large zinc resources, being extensively developed and utilized. With metals at present high prices there certainly should be more properties producing ore than during years when prices were low. It is to be hoped that 1906 will witness a general revival of interest in mining in the Slocan, and that it will prove to be a good, if not a record, year.

McGUIGAN BASIN.

Lucky Jim.—The owners of the Lucky Jim are stated to have about 1500 tons of zinc ore at Kaslo awaiting a buyer at the price they have placed upon it, beside some at the mine, ready for shipment. The total product of zinc of this mine in 1905 is reported to have been 4600 tons of 54 per cent zinc ore, and 745 tons of 48 per cent concentrate. From 12 to 16 men have been employed at the mine. Some silver-lead ore occurs here, although the larger part of the ore is zinc. The former is being piled up at the mine for the time being. Some time since about 1000 tons of silver-lead ore were shipped to the Payne mill, Sandon, and concentrated there, but since then, as already stated, it has been kept at the mine. The division of profits during 1905 to a total of $80,000 by the owners of the Lucky Jim has frequently been mentioned in the provincial press.

Soho.—The Soho Consolidated Mines, Ltd., reports having done 1697 ft. of deevelopment work in 1905, 197 having been sinking and raising and the remainder crosscutting and drifting, and having produced 120 tons of ore, which, was not shipped, however. This property adjoins that of the Rambler-Cariboo Mines, Ltd., whose long tunnel was started on the Soho's ground.

Rambler-Cariboo.—The long crosscut tunnel being driven at this mine is now in about 3500 ft., leaving about 800 ft. to be driven. It is expected that the vein will be cut by about May 1 next. There is little to add to the bare statement that good progress continues to be made with this important work. Some time since stringers of ore were met with in the tunnel, but these were not large, nor is it expected any shoot of ore of consequence will be encountered until the tunnel shall reach the vein, to cut which it is being driven. The old workings in the upper part of the mine are still under lease.

Red Fox.—This property is being worked under lease and is making occasional shipments, two or three cars of ore being sent out, with more expected to follow. A gasoline hoist is said to be in use here.

Antoine.—Development work was done in 1905, as usual, but no ore was shipped. The Antoine has a considerable quantity of high grade zinc ore in sight which up to the present time could not be economically marketed. It will, however, be prepared to take advantage of any improvement in the position for zinc that may take place in 1906, and which shall admit of the ores (galena and zinc) being taken out together, without the sacrifice of one or the other.

Surprise.—Nothing was done on the Surprise group until September, when the owners completed the purchase of a half in terest in the No. 3 tunnel of the Last Chance mine, which is situated some distance below the Surprise and on the same mountain. This tunnel is now being driven through to the Surprise ground and will be completed about April 1. It will give the Surprise an additional vertical depth of 750 ft.

R. E. Lee.—Not much has been done on this claim. Four men are now working under lease.

Great Western—About 150 ft. of work was done under contract last summer, but nothing is now being done here.

Washington. — Nothing done during 1905.

Slocan Boy.—This was leased in the early part of the year and some work was done on it for a time, during which two cars of ore were shipped.

ABOUT SANDON

Payne.—In the temporary absence from the province of the manager of the Payne mine, but little information has been received concerning this property. During the year the upper and lower parts of the mine, respectively, were under lease to separate parties. From the end of 1905 a new arrangement will be in force, Mr. Walker Smith having been granted a three years' lease of the whole property. It is stated that he will work the mine with more men than have been employed in it for some time past.

Mercury.—The work done on this property consisted of a raise being put up just near the Boundary line of the claim. No ore was shipped.

Majestic and Unexpected.—The lessees of the Majestic did 125 ft. of development work and shipped about 190 tons of ore in 1905. A new bunk house was built, this providing accommodation for 12 men. The vein is wide, from 12 to 16 ft., with the ore occurring mostly in kidneys. Stoping is in progress between levels Nos. 3 and 2, where a streak of clean galena, 8 to 16 in. thick, is found along the back of the stope. Only sufficient ore has been taken out to pay expenses, which policy the lesssees intend continuing for a time. So far no zinc has been met with in the vein.

American Boy.—This mine worked 12 to 14 men and shipped about 300 tons of silver-lead ore.

Last Chance.—Work was continued steadily throughout the season and about 300 tons of ore were shipped. It is intended to resume operations in the spring.

Reco.—The early breaking up of the trail last spring cut short the rawhiding from the Reco by about six weeks, consequently the output last season was not so large as was intended it should be. A few men were employed all the summer in development work and in packing out a little ore for current expenses. The company declared a dividend of two cents per share early in the year, the total amount thus disbursed having been $19,582. This brought the total of dividends paid to that date up to $307,082.

Goodenough.—In October the Goodenough Co. made a shipment of 30 tons of zinc concentrates from its Grey Copper claim, which was the first lot of zinc received by the Canadian Metal Co.'s zinc smelter at Frank. This ore was used for a test run of the smelter and produced the first commercial zinc made in Canada. About 150 ft. of development work were done on the Grey Copper in 1905, and nearly 150 tons of ore produced. Excepting 40 tons sent to the Payne concentrator, the ore was sacked and kept at the mine. The Grey Copper had been idle for years owing to there being so much zinc in its ore and with no profitable market for that class of ore.

Blue Bird.—Work was done, first by the company and then by lessees. Two cars or ore were shipped during the year.

Sunset and Trade Dollar.—From 12 to 14 men were employed on this property, on which a new shoot of ore is reported to have been struck. A new trail was made and lumber for new buildings was hauled. It is thought some 200 tons of ore will be shipped.

Mountain Con.—Development consisted of 75 ft. of raising and 300 ft. of drifting. Ore shipped amounted to 60 tons. This property cannot be worked advantageously during the winter months, owing to its altitude—9000 ft. The ore is of remarkably high grade, assays running as high at 6440 oz. silver to the ton; it carries but little lead. Development was retarded owing to the property having been under bond. It is expected a considerable quantity of ore will be shipped next season.

Slocan Star.—This mine was worked all the year. In the spring, when the mill was started, 70 to 80 men were employed and this number was kept up until the mill was shut down in the autumn. Some 2000 tons of zinc concentrates were made, which added to a similar quantity made the year before brought the production of zinc up to about 4000 tons. The mine also shipped about 2000 tons of silver-lead ore and concentrates—about one third clean ore and the balance concentrates. A dividend was declared a short time since, amount divided totalling $25,000, which makes about $600,000 in all distributed in profits. The shaft has been deepened and other development work done with 20 men employed ever since the mill stopped. A new find of ore was made in the company's Silversmith claim. The mine is stated to be looking well with a promising outlook for a profitable year in 1906. An increase has lately been made in the compressor plant by the addition of a 10 drill air compressor.

Ruth.—This is another mine that has been largely interested in the solution of the zinc pblem, having produced in its concentrating mill about 1000 tons of zinc concentrates, which had further treatment in the Kootenay Ore Co.s magnetic zinc separation plant at Kaslo, in order to make it saleable at a profit. The latter plant gave entirely satisfactory results on the Ruth product, so the Ruth mill will be started again in the spring to make separate lead and zinc products, the material for which is already available. Beside the zinc product the Ruth shipped in 1905 about 400 tons of galena. The Ruth is another of the properties to which the Zinc Commission gave the benefit of their high technical ability.

Ivanhoe.—This property was worked up to December 1, when it was closed down. During the year it shipped about 540 tons of zinc concentrates and 400 tons of silver-lead.

AROUND THREE FORKS

Monitor.—The Monitor & Ajax Fraction, Ltd., owning the Monitor mine, did only 300 ft. of development work on that property in 1905 fr the reason that its attention was given to the completion of its zinc and lead concentrator at Rosebery. Shipping ore bins were built at Three Forks. At Rosebery 960 tons of ore were concentrated and 156 tons of lead concentrates were shipped. There are 537 tons of zinc concentrates on hand. The concentrates obtained were from second class dump ore, of which there are still about 2000 tons at the mine estimated to contain 375 tons lead concentrate and 1100 tons zinc. The raw ore (mill feed) assays: Silver 20.04 oz. per ton; lead, 10.29 per cent; zinc 23.7 per cent. The mill recovery lead concentrates assay: Silver, 54.4 oz. per ton; lead, 46.5 per cent. Zinc concentrates assay: Gold, $3.00, and silver, 16.2 oz. per ton; lead, 3.5 per cent; zinc, 35 per cent; iron, 15 per cent. The zinc concentrates, to be made a valuable product will have to be treated by magnetic separation. Plans for the necessary plant, to cost about $15,000, and to be erected on the property as early as possible in the year, have been submitted for approval. This plant will be in connection with the Monitor concentrator at Rosebery. Previous to 1905 the Monitor shipped 3051 tons of ore averaging: Gold, $8 per ton; silver, 126 oz. per ton; lead, 52 per cent.

Corinth.—The Corinth group, N. J. Cavanaugh, et al., lessees, did 170 ft. of development work. No ore was produced, but the property gives promise of becoming a steady shipper in the near future. The lessees, whose lease is for three years from August 1, 1905, are bending their energies towards opening the property, and they intend, if their efforts prove successful, to erect a small mill to treat the concentrating ore from this and adjacent properties.

Queen Bess.—This property has been leased to four men who also worked it some time ago. One car of ore was shipped last season.

Silver Bell and Hustler.—Four or five men have been at work. It is understood that the owners of the Sunset have obtained this property.

Lone Bachelor.—This property is situated between Three Forks and Sandon and is regarded as one of the best properties in that locality. It is working about 25 men and is shipping six to seven cars of ore per month. About 60 per cent of the ore is carbonates and no zinc is present.

Idaho-Alamo.—Development on both veins has been continued right along and some 12 men are employed. No particulars of the work were received.

NEW DENVER AND SILVERTON

Only brief notes were obtained concerning several properties in this part of the Slocan, as follows: The Hartney has shipped about 100 tons of zinc; the Marion, under lease to C. J. Campbell, did 40 ft. of work and shipped 34 tons of galena running 120 oz. silver per ton and 65 per cent lead; the California Clipper shipped eight cars of silver-lead ore, the property having been worked on a royalty basis; the L. H., which is said to have a cyaniding gold ore, has been bonded by the Canadian Metal Co.; the Bosun has been acquired by the Monitor and Ajax Fraction, Ltd., but no work was done on it, but it is expected a start will be made early in the new year. This last mentioned mine was the first Slocan property to ship zinc to Europe, having in 1899 shipped to Antwerp, Belgium, 1900 tons of zinc ore, which also carried silver from 50 to 80 oz. to the ton.

Emily Edith.—Mr. M. S. Davys worked this property under lease and sent from it about 700 tons of ore to the Wakefield mill Shipment to the Nelson smelter were eight cars of ore and concentrates. The lease has been transferred to the Canadian Metal Co. which has started a new tunnel at a level 100 feet lower down, and which will have to be driven 250 to 300 ft. to reach the ore. There are in this mine big bodies of zinc ore.

Comstock.—About 30 tons of ore, obtained in cleaning up, were shipped, and work was then stopped. There is a lot of deadwork to be done before shipping can be resumed, and this will be undertaken next summer.

Reid and Tenderfoot.—Two men drove about 50 ft. last summer and opened up a nice shoot of galena. These claims are part of the Galena Farm group and are a northerly extension of the Wakefield. They are operated by M. S. Davys.

Wakefield.—W. Hunter has sub-leased this property from M. S. Davys, and has shipped from it 80 tons of ore. Some 300 to 400 tons of concentrating ore are on the dump awaiting spring to be put through the concentrator.

Vancouver Group.—M. S. Davys has lately taken hold of this property under a three years' lease. He is continuing the lower tunnel to strike a body of ore that was formerly followed down by a winze above. The same series of veins occurs here as are on the Hewitt. There is quite a large body of concentrating ore, with a deal of zinc in it.

Hewitt.—M. S. Davys did about 1000 ft. of development work on this property in 1905, extending tunnels, opening up the south vein and the main and north veins into the L. D. ground. Shipments were 23 cars of ore from the Hewitt and five cars from the L. D. Hewitt ore runs about 125 oz. silver and 5 to 6 per cent lead; the L. D. ore contains similar silver values and about 12 per cent lead. Development is down to about 820 ft. depth, but no work has been done at that depth. Some 100 tons of mixed ore from the 4th, 5th and 6th levels were sent to the Wakefield for a test; this contained lead, silver and zinc, and the results were satisfactory. Last October fire destroyed the upper terminal of the aerial tramway and the ore bins, causing a loss as well of two cars of ore. The buildings have been replaced. The mine, which employs an average of 20 men, is looking very well indeed.

Other Properties. — Three men are working on the Mountain Boomer, one of the Vancouver group, and three to four cars of ore have been shipped. Two cars of ore were sent out from the Noonday, an easterly extension of the Galena Farm, on which four men have been working. Quite a lote of development has been done on the Standard, by Geo. Aylard, who has opened up a very promising body of ore. This property is situated above the Emily Edith and is an easterly extension of the old Alpha group.

SLOCAN CITY.

Notes were received from only two properties in this division—the Enterprise and Ottawa.

Enterprise.—This property is under lease to W. C. E. Koch, who shipped 197 tons of ore last year. It is estimated that the mine will have to be further developed at a cost of about $25,000 before it can be made productive to any considerable extent.

Ottawa.—Between 500 and 600 tons of ore were shipped from the Ottawa in 1905. Best values, being 230 oz. silver to the ton, were obtained from ore taken out of the lowest level—No. 5— on which level an important strike of rich ore was made last summer. The number of men employed at this mine is 32. There has ben much stoping from the 5th to the 4th level, and a lot of development has been done on both levels.

EAST KOOTENAY

Unfortunately, it was not practicable for the writer to visit East Kootenay, although planned to do so. As a result of this inability to obtain information on the spot, little is available for the purposes of this revew. Just two responses were received to applications for particulars of the year's mining and its results. The Aurora, it was learned, had done 260 ft. of development work and had got out about 40 tons of ore, the work having been done under a bond to Wilson Mackay, of Portland, Oregon, and the St. Eugene had a brief statement to make showing the main facts of its year's work and progress. It is regretted that such scant information was obtained, yet there is the position, and the best must be made of it. There is one fact that may be mentioned, though, as a result of the success of the St. Eugene, and since it will not appear elsewhere in this review, it will be mentined here. The Canadian Goldfields Co., which has a considerable number of St. Eugene shares, has paid its stockholders a dividend every time the St. Eugene has divided profits. Four times in 1905 this company distributed $12,000, being moneys received as its share of the dividend paid by the St. Eugene.

St. Eugene.—The following is a summary of the work done at the St. Eugene mine, Moyie, East Kootenay, in 1905.

Development work consisted of 2029 lin. ft. of sinking and raising, and 5744 ft. of crosscutting and drifting, making a total of 7773 lin. ft., and bringing the aggregate footage in the mine up to about eight miles.

About 130,000 tons of ore were mined and concentrated, and about 30,000 tons of concentrates shipped. Of this quantity 11,708 tons were shipped to Europe and the remainder to the smelters at Nelson and Trail. The average was silver 34 oz. per ton and lead 67 per cent.

New machinery installed included three Jenckes Machine Co.'s boilers, each 165 h.p., and one Rand-Corliss air compressor, capacity 3100 cu. ft. of free air per minute. New shaft house and boiler and compressor buildings were erected at a cost of abut $20,000.

Four quarterly dividends were paid, in January, April, July and October, respectively—totalling nearly $280,000. The net earnings for the year were more than $500,000.

The foregoing concise statement partly tells the story of the progress made at the St. Eugene mine last year. It does not tell, however, of the striking developments underground, the big shoots of lead-silver ore opened up and the new finds made. It conveys no information about the great wealth contained in the mine nor the promise it gives of contributing largely to the mineral production of British Columbia for years. It is simply a plain dry statement of figures and facts, and leaves to the imagination of the reader the more attractive side of the subject with which it deals. And, yet, there is not much to be added, for it tells the best part of the story of mining wherever carried on—the story of profits earned and dividends paid. This is the story that British Columbia mines most need, and if it were told by scores of mines, whether owned by companies or by individuals, there would soon be brought about a transformation in the mining industry of the province. The St. Eugene is a striking figure in the mining world of British Columia, and one that is doing much to attract attention to the mineral wealth of the province.

THE shrdlu k4 , hgfdG shrdlu shrdl

The C. N. P. C. Co.—The output of the Crow's Nest Pass Coal Co. for 1905 was as follows:

	Tons.
Coal Creek mines	429,382
Michel mines	311,071
Carbonado mines	95,170
Total	835,623

The Fernie coke ovens produced 127,062 tons; the Michel oven 127,037 tons, and the Carbonado ovens 7804 tons, making a total for the year of 261,933 tons, which at $4.50 per ton realized $1,178,698.50. It takes 100 tons of coal to make 60 tons of coke, so that the 261,933 tons of coke produced represents 436,555 tons of the total coal output leaving 399,068 tons of coal, which at $2 per ton brought into the treasury $798,136, making a total revenue for the year just closed of $1,976,834.50.

ROSSLAND

The three leading mining companies at Rossland made profits during 1905. The Le Roi wiped out a big debt and showed a balance to the good. The Centre Star's operations resulted in a substantial credit balance, and the Le Roi No. 2 paid a dividend and carried over a credit balance beside. The following is a summary of the operations of these companies:

Le Roi.—The Le Roi made an output of 113,694 dry tons of ore. Of this 2856 tons were concentrated at the small concentrator installed at the mine for experimental purposes and the remainder was sent to the smelters, the bulk of it to the company's works at Northport.

The year's record includes development at greater depth than in previous years. A vigorous policy of development at the 1450-ft. level finally resulted in the discovery of a shoot of high grade ore at that depth. Then a similar shoot was found at the 1550-ft. level, and now the winze known as the 1350-ft. winze, is being sunk, with the intention of carrying it down to the 1750-ft level and exploring for ore at that depth. The finding at this lower level of a large body of ore of a grade that it will pay to ship would make a great difference in the future of the mine, so it is earnestly hoped that the efforts being put forth in this direction will be successful.

Centre Star and War Eagle.—The output of these mines, now consolidated, was as follows: Centre Star, 94,550 tons; War Eagle, 61,117 tons; total, 155,667 tons. The footage of development work done was: In Centre Star, 6425 lin. ft.; in War Eagle, 6671 lin. ft.; total, 13,096 lin. ft. Beyond these bare figures no information was obtainable, excepting that the mines together employed 400 men, and that the lowest levels are the mines, the 10th and 11th levels, are being prospected.

Le Roi No. 2.—The tonnage of ore shipped was 10,451 and that put through the company's concentrator, 11,584 tons; total, 22,035 tons. The total receipts for this ore, including the concentrates, was approximately, $310,000. About 70 men are employed at the mine and forty at the concentrator; the number has varied from time to time but these are last week's numbers. The footage driving. The diamond drill did 3083 ft. of the greater part crosscutting and drifting. The diamond drill did 3083 ft. of drilling, in prospecting at several levels in the mine. The work of sinking from the 900-ft. level was discontinued on an arrangement having been made with the management of the Le Roi mine for the 1350-ft. level of that mine being driven into Le Roi No. 2 ground. This work requires 300 ft. of cross cutting, the greater part of which has been done. The May Day tunnel has been driven about 350 ft. and has opened up good ore. On the 600-ft. level, the downward continuation of the old shoot of ore has been exposed, and, similarly on the 650-ft. intermediate level, these shoots have been shown up. Work on the 500-ft level has also been successful in finding ore.

Altogether the mine is in a fairly satisfactory condition and the company has been earning profits, part of which it has distributed among its stockholders.

THE DAILY NEWS

A word or two about ourselves may not be out of place on this occasion, for The Daily News is no inconsiderable factor in the industrial life of Nelson. This establishment gives regular employment to 17 hands, and has an average monthly payroll of $1500.

The Daily News is now in its fourth year. It is still an "infant industry" and requires constant care and watchfulness, but it is a lusty youngster and gives promise of vigorous growth.

The Daily News can look back on 1905 with some measure of satisfaction. The newspaper end of the enterprise is steadily progressing and is now in a fair way to become remunerative. The commercial job printing, ruling and bookbinding branches also show steady expansion. The fact that there is in Nelson a thoroughly equipped printing establishment, capable of turning out every class of commercial work from staple office stationery to the most complicated mine, smelter or mill ruled work, is becoming widely recognized throughout southern British Columbia. It is a great convenience to mine, smelter and sawmill managers to be able to obtain promptly a class of work that otherwise they would have to send east for and, despite the higher wage scale and excessive freight charge, they find that The Daily News can lay down the work at as low a cost as the eastern houses, and with the advantage of a decided saving of time.

The publication of a daily paper in Nelson must necessarily for some time to come be a more or less precarious undertaking. To produce an up to date paper entails expenditure out of all proportion to the earnings. But the field is a promising one and with the development of the mining and lumbering industries, and the settlement of the vacant lands, there will undoubtedly be opportunities for the profitable publication of a daily paper. In the meantime the prospects are that The Daily News will be able to hold its own. It has weathered three years of depression and with the brighter outlook now everywhere manifest there is justification for renewed effort.

Apart from giving a good news service, The Daily News believes it is doing its share in building up southern British Columbia, and that its work in making known the resources and potentialities of the Kootenay and Boundary districts is appreciated by a constantly increasing circle of readers.

MUSSEN & Co
MINING
MACHINERY
MONTREAL

See Advertisement in Section One.

W. H. C. MUSSEN & CO., MONTREAL

VOL. 4 NELSON, B. C., MONDAY, JANUARY 1, 1906 NO. 214

MINING IN BRITISH COLUMBIA IN 1905

Review of Past Year's Operations Demonstrates That New High Record of Production was Established--$20,963,000

Conditions That Made for Improvement in 1905 Give Promise of Permanency, and With the Increased Facilities for the Economic Treatment of Ores, the Outlook for 1906 is Very Encouraging

British Columbia's mineral production for the year 1905 has established more strongly than in any previous year its undoubted claim to the distinction of being the "Mineral Province of Canada," as it has often been designated, so far as the production of the several metallic minerals, gold, silver, copper, and lead, are concerned. A glance at the figures of production in 1904 will serve to show what the relative positions of British Columbia, Yukon territory, and the remaining parts of Canada, respectively, were, in respect of the proportions of the total value of the several minerals mentioned contributed by each of these three divisions of the dominion. These were: British Columbia, $13,424,335; Yukon territory, (gold only) $10,337,000; all other parts of the dominion, $1,914,063; total, $25,675,398. This showed British Columbia to have in that year produced the four metals above named to a value of $1,173,272 greater than all parts of the dominion of Canada combined. It is true that when iron and nickel (of which metals British Columbia did not produce any quantity worth taking into account) were added, the position was somewhat changed, for these brought the total production of metallic minerals in the whole dominion up to $30,796,431, of which, though, British Columbia contributed nearly 44 per cent. It is too early to obtain in time for this review even an estimate of the value of the production of metallic minerals in Canada east of the Rocky Mountains, but there are two known facts that suggest the probability of British Columbia being shown, when statistics shall be available, to have at least held its own, even though it may not have further strengthened its pre-eminent claim to the designation "The Mineral Province." These are (1) that its own production of metalliferous minerals will have been nearly $2,500,000 higher in market value in 1905 than in 1904, and (2) that the value of the production of the Yukon will be found to have been from $2,300,000 to $2,500,000 less, these together giving British Columbia an increase in proportion of the aggregate of the dominion that may offset even the gain Ontario is understood to have made in the Cobalt district, where phenomenally rich silver ores have been found

That a substantial increase was made during the year just closed, and to an extent that will show the year's production to have been the highest in the history of the province, may be safely accepted as an assured fact for the estimate of its value gives a total some $876,000 higher than that of the production of the highest previous year, viz., that of 1901, when a total value of $20,086,780 was reached, which margin is believed to be more than sufficient to cover all over-estimates, if any have been made, of individual districts. The probabilities are, rather, that the official figures, when these shall be made public, will be found to prove the general reliability of the accompanying estimate, for an amount known to be well within the actual production has in some cases been taken—such an one as Atlin, for instance, where the estimate has been kept down to very little more than the 1904 official value, while the lowest of other estimates published since the close of the season have placed the production of that district at fully $70,000 higher than that of 1904. This being the case, it will be readily seen that while, there may have been some over-estimates there is an equal probability of these being counter-balanced by under-estimates that will have the effect of keeping the estimate of the aggregate value of production for the year well within its actual limits.

The totals of mineral production in British Columbia during ten years, 1896-1905, provide an object lesson to which, in the interests of the mining industry of the province, too much prominence cannot be given, so they follow:

Year.	Total Value.
1896	$ 7,507,956
1897	10,455,268
1898	10,906,861
1899	12,393,131
1900	16,344,751
1901	20,086,550
1902	17,486,550
1903	17,495,954
1904	18,977,359
1905 (estimated)	20,963,000
Total for ten years	$152,617,610

The considerable advance made in the year just closed is the more gratifying for the reason that the increase is not alone due to the higher average prices of copper, silver, and lead as compared with those of 1904. A materially increased tonnage of minerals has also contributed largely to the gain made, and in this respect the improvement appears to be permanent rather than temporary, which is still more satisfactory. It is true that in several districts there has been a decrease, but in only one, viz., the Coast, has this been serious, and even here there is the sufficient reason that this was in part brought about by a labor difficulty that prevented one colliery from contributing its ordinary share to the year's total production. The other disturbing factor—the reduction in output at the Tyee mine, Mt. Sicker—will in 1906, (even should the Tyee not be again as productive as before, which it may be) be more than compensated for by a much larger output from the Britannia mines, which late in the year commenced shipping to the smelter and may be expected to produce to a steadily increasing extent from now on.

papers have variously stated the season's total recovery of gold in Atlin district at amounts ranging from $600,000 to $1,000,000. It has been deemed advisable in view of the general unfavorableness of the season, to place it at less than $550,000 in this estimate, no verified figures having yet been received to prove the district's production to have been much larger than that of 1904, which appear in the official records as having totalled $530,000. Further, it will be seen that since the Consolidated Cariboo Hydraulic Co., recovered gold to the value of only $21,733 in 1905, as compared with $85,936 in 1904, it will be understood that even the considerably better season reported by several individual places mines in Cariboo, could hardly be expected to have overcome this shortage, hence the decrease shown in the production of that district, which is only in gold. Another reference will be made later in this review to the Consolidated Hydraulic Co., for the purpose of showing its improved prospects.

The next following table shows the respective totals of value of minerals produced in 1904 and 1905:

	1904.	1905.	Increase.	Decrease
Gold, placer	$1,115,300	$1,110,000	$	$ 5,300
Gold, lode	4,589,608	4,640,000	50,392	
Total gold	$5,704,908	$5,750,000		
Silver	1,719,516	2,045,000	325,484	
Copper	4,578,037	5,430,000	851,963	
Lead	1,421,874	2,368,000	946,126	
Zinc		320,000	320,000	
Total metalliferous	$13,424,335	$15,913,000		
Coal	3,760,884	3,090,000		$670,884
Coke	1,192,140	1,210,000	17,860	
Building materials, etc.	600,000	750,000	150,000	
Total non-metalliferous	$5,553,024	$5,050,000		$676,184
Total increase			$2,661,825	
Less decrease			676,184	
Net increase			$1,985,641	

Being about 10.4 per cent.

SUMMARY

	1904	1905.
Metalliferous	$13,424,336	$15,913,000
Non-Metalliferous	5,553,024	5,050,000
Total production	$18,977,359	$20,963,000

In calculating the values of the several minerals to obtain the totals shown in the foregoing table, placer gold has been taken as worth $20 per oz., lode gold at $20.67 per oz., silver at 60 cents per oz. less 5 per cent; copper at 15 cents per lb., lead at 4.6 cents per lb. less 10 per cent; zinc has been averaged at $24 per ton, coal valued at $3 and coke at $5 per ton of 2240 lbs.

The quantities of minerals produced were as under:

	1904.	1905.	Increase.	Decrease
Gold, placer — Ozs.	55,765	55,500		265
Gold, lode — Ozs	222,042	224,490	2,448	
Total gold — Ozs	277,807	279,990	2,183	
Silver — Ozs.	3,222,481	3,587,719	365,238	
Copper — Lbs.	35,710,128	36,200,000	480,872	
Lead — Lbs.	36,646,244	57,200,000	20,553,756	
Zinc — Tons		13,330	13,330	
Coal—Tons of 2240 lbs.	1,253,628	1,030,000		223,628
Coke—Tons of 2240 lbs.	238,426	242,000	3,574	

It will be seen that, leaving out of account the small increase in placer gold which revised figures will probably show to have been under-estimated, the only mineral that did not exceed in quantity as well as value the production of 1904 was coal. As already stated, the cause of this was a labor difficulty, which trouble led to the shutting down of the Western Fuel Co.'s collieries at Nanaimo, Vancouver Island, for seven to eight months Happily the matters at issue were adjusted and operations resumed before the year ended.

Coming now to production by districts, here again there is general cause for congratulation, the decrease having, with the single exception of the Coast district been small, and all were due to causes that will in all likelihood be overcome in 1906 The comparatively big increase in East Kootenay was due chiefly to the enlarged output of lead from the St. Eugene mine—a result first of the lead bounty granted by the dominion government, and next to the higher average price of that metal. In the Boundary section of Yale district the increase of more than 33 per cent is in a large measure the direct outcome of a combination of a much bigger production of copper-gold ore and the higher average price of copper the year through. The production by districts is shown in the following table:

District.	1904.	1905.	Increase.	Decrease
Cariboo	$ 474,600	$ 460,000		$ 14,600
Cassiar (Atlin, etc.)	558,474	563,500	5,026	
East Kootenay	3,210,672	4,927,500	1,716,828	
West Kootenay	5,806,070	5,706,000		100,000
Lillooet	34,583	30,000		4,583
Yale, (Boundary and Similkameen)	4,190,281	5,651,500	1,461,219	
Coast, (Mainland, Vancouver Island, etc.)	4,102,679	2,874,500		1,228,179
Miscellaneous (Building materials, etc.)	600,000	750,000	150,000	
Totals	$18,977,350	$20,963,000	$3,333,073	$1,347,432
Less decrease			1,347,432	
Net increase			$1,985,841	

Taking the several minerals separately, some observations may be made that will briefly indicate the situation in regard to each of them.

Gold.—The dry and short season for placer mining operations was accountable for the lack of progress, from a production point of view, in connection with this branch of the mining industry. This, notwithstanding, there has been real progress in the direction of mining methods that give much promise of making for permanent improvement in placer mining, whether by hydraulic mining, deep drifting, or dredging. Before glancing at these in passing, it should be stated that though estimates published in provincial newspapers have variously stated the season's total recovery of gold in Atlin district at amounts ranging from $600,000 to $1,000,000, it has been deemed advisable in view of the general unfavorableness of the season, to place it at less than $550,000 in this estimate, no verified figures having yet been received to prove the district's production to have been much larger than that of 1904, which appear in the official records as having totalled $530,000. Further, it will be seen that since the Consolidated Cariboo Hydraulic Co., recovered gold to the value of only $21,733 in 1905, as compared with $85,936 in 1904, it will be understood that even the considerably better season reported by several individual places mines in Cariboo, could hardly be expected to have overcome this shortage, hence the decrease shown in the production of that district, which is only in gold. Another reference will be made later in this review to the Consolidated Hydraulic Co., for the purpose of showing its improved prospects.

In regard to improved methods in mining for placer gold—these are several, including the deep drifting now appearing to be approaching a successful outcome to the efforts of the past two or three years to overcome the serious difficulties that have attended it; the measure of success that has attended gold dredging operations, especially in the Atlin district; and the profitable return reported to have been obtained following the installation, late in the season, of a steam shovel, also at Atlin. The interesting notes by Mr. H. W. Ebbs Canavan, C. E., on dredging at Atlin, printed elsewhere in this issue, show some of the difficulties met with as well as the success achieved. The deep drifting operations at La Fontaine on Lightning creek, of the Cariboo Consolidated (1904) Ltd., and on Slough creek, also in the Cariboo district, give promise of eventually proving successful. The great flow of water from the ends of the drifts, which is the chief obstacle in the way of mining the gold-bearing gravels proved to occur in the ancient channels in which these deep-drift workings are gradually being advanced, is being lessened, and the expectation is that ere long it will be possible to proceed with the extraction of the gravels lying on bedrock and which contain gold in such quantities as will yield large profits. An idea of the flow of water may be obtained from mention of the fact that last June more than 1,000,000 gallons per day were flowing into the deep drifts of the Slough creek mine, which quantity kept the pumps going constantly at a moderate speed. Until the high pressure of so large a volume of water flowing in at the drift ends shall have been considerably reduced, the mining of the gravels on a profit basis will not be practicable. No particulars have been received relative to the steam shovel at Atlin other than that its initial operations were successful and profitable.

The increase in lode gold was contributed largely by the copper-gold mines of the Boundary section of Yale district, and by the Nickel Plate mine, near Hedley, Similkameen. These are estimated to have added about $400,000 to last year's total. Ainsworth and Kamloops divisions will probably be found to have together added $15,000 to $20,000 on this account. On the other hand Rossland mines have, it is thought, yielded about $250,000 less in gold this year notwithstanding that they made a gain in tonnage. If this estimate be borne out by the actual returns, the smaller gold yield may be attributed to the fact that lower costs admit of the marketing of lower grade ores, which in itself is an important gain, since there are, beside a fair proportion of higher grade, large quantities of such ores in Rossland mines ready to be turned to profitable account so soon as conditions shall admit of their being so disposed of. The Coast districts will probably be found to have suffered a loss of about $100,000 in their lode gold, for which the reduced output of the Tyee mine will have been responsible.

Silver.—By far the greater part of the net gain of $325,000 made in silver is credited to East Kootenay, where the St. Eugene mine was a large shipper of lead-silver ore, and the Sullivan group, also in Fort Steele division, joined the producing mines. Lack of suitable transportation facilities militated against northeast Kootenay doing even as well as it did in 1904, so a small loss has been anticipated in estimating its production. In West Kootenay, Ainsworth division should show a silver yield approximating $50,000; Nelson a slight increase, to about $110,000; and Slocan and Slocan City divisions together well on for $900,000, which would give them a joint gain of nearly $80,000. For the same reason as that assigned for the expectation of reduced gold returns from Rossland ores, a loss of a few thousand dollars in their total silver contents is estimated. The Lardeau may also be regarded as having produced less silver, the cessation of shipments from the Silver Cup mine during the year having lessened production to an extent that will probably be found to have reduced the local silver yield to the extent of about $15,000. In Yale district an increase of $14,000 is looked for, largely from the Boundary, and to a small extent from Kamloops. A decrease of fully $35,000 is estimated to have taken place in the Coast districts.

The outlook for a further total increase in the production of silver in the province is regarded as favorable, even should the present high price not be maintained. The introduction of improved processes at the provincial lead smelters may be expected to result in lower smelting costs; the marketing of zinc ores containing silver—a product heretofore practicably unsaleable so far as British Columbia ores of this nature are concerned; and the extension of the leasing system, that is finding increased favor, especially in the Slocan; all make for increased production. Further, the success met with in operating several of the "dry ore" mines of the Slocan, such ores usually carrying high silver values, will, no doubt, lead to renewed activity in the accessible parts of the "dry ore belt," with a resultant increase in the output of silver.

Copper.—Speaking at the annual general meeting of shareholders in the Canadian Bank of Commerce, held in Toronto last January, the general manager of that important institution, in the course of a comprehensive address, commented briefly on the mining industry of British Columbia. Of metalliferous mining he said: "The mining and smelting of metalliferous ores is probably in a sounder position than ever before. Hight prices for copper, increased knowledge of the technical features of mining, a sufficient supply of coke, and the absence of share speculation in untested or worthless properties, are the satisfactory features. The least favorable is the uncertainty as to the permanence of reasonable relations between the mine owners and labor." The experience in British Columbia during 1905 has been in the main that the "satisfactory features," as above narrated, have been intensified, while the "uncertainty" has almost, if not quite, altogether disappeared. The year has most assuredly been a favorable one for copper mining, for if the larger copper companies of this province made profits, as they undoubtedly did, in 1904, with copper at an average price in New York the year through of about 12½ cents, there was every incentive to secure an enlarged production with an average price nearly three cents higher, as was the beneficial experience of 1905.

The estimated gain in the value of copper produced was mostly from the Boundary district, to which an increase of nearly $1,000,000 has been credited. Kamloops has also been regarded as having made a gain—probably something like $50,000. Rossland has been taken to have produced rather less copper than in 1904—probably to the extent of $10,000 to $15,000. The output of ore from the Silver King mine may have enabled Nelson to show a rather higher production of this metal. The Coast must have fallen short of its 1904 yield by about $160,000. No other part of the province than these several divisions is as yet a copper producer to an extent worth mentioning.

Lead.—An increase of 20,500,000 lbs. of lead, or rather more than 50 per cent on the production of 1904, is a decidedly substantial and satisfactory result of the year's lead ore mining. While about 40,000,000 lbs. of the 57,000,000 lbs. produced came from the St. Eugene mine, East Kootenay, and a few mines contributed much of the remaining 17,000,000 lbs. it is interesting to note that the total number of mines and prospects that shared in making up this large aggregate was fully 200. The sources of this production, as regards district, were as follows:

Lead Produced in:—	Tons
East Kootenay	24,200
Ainsworth and Slocan	3,698
Other parts of B. C.	738
Total for 1905	28,636

This was disposed of as follows:

	Tons
Exported as ore or concentrates	7,763
Smelted in British Columbia	20,873
Total	28,636

Had it not been that two fires destroyed buildings and plant at the St. Eugene and compelled a suspension of production at that mine for two to three months, fully 3,000 tons more ore and concentrates containing lead, would have been delivered to the home smelters, and so probably have made the year a record one for lead production in the province, the highest point reached having been in 1900, when the total was 31,679 tons.

As shown in Mr. G. O. Buchanan's article on another page, of the quantity smelted in British Columbia, in round numbers the proportions at the several smelting works were: Hall Mining & Smelting Co.'s smelter, Nelson 8,900 tons; Canadian Smelting Works, Trail, 6,400 tons; at other works (probably all at the Sullivan smelter, Marysville) 5,600 tons. Additional figures, being for the fiscal year ended June 30, are: Bounty (granted by dominion) earned on lead smelted in British Columbia, $240,059; on exported lead, $97,157; total, $337,216. The bounty on exported lead ceased on June 30, 1905. Towards the close of the year the price of lead rose above that at which the payment of the bounty automatically ceases. The extreme price—London quotation—afterwards reached was that of December 12, viz £17 8s. 9d.

Zinc.—The production of zinc in 1905, shown in a foregoing table as 13,320 tons, includes a considerable quantity not actually shipped by the close of the year, but awaiting the convenience of the Canadian Metal Co., owners of the zinc smelter, recently erected at Frank, southwest Alberta. The larger producers of zinc were the following:

Mine.	Tons.	P.C.
Slocan Division—		
Lucky Jim (Ore)	4,600	54.0
Lucky Jim (Concentrates)	745	48.0
Slocan Star "	4,093	33.5
Ruth "	1,000	38.0
Ivanhoe "	541	46.0
Ainsworth Division—		
Jackson (Concentrates)	1,150	38.0
All others say "	1,201	40.0
Total	13,320	
Average		42.0

An average value of $24 per ton has been estimated as that of this metal. Some 20 mines shipped zinc; it is thought that the number of zinc producers will be greater in 1906, and that production will be at least 40,000 tons.

Following the example previously set by the Payne and Ivanhoe, the Slocan Star, Ruth, and Jackson mines remodelled their mills and altered their mill practice so as to admit of their making a separate zinc concentrate in addition to the lead product, for which latter the mills were originally intended. The Monitor, at Three Forks, erected at Rosebery, a water concentration plant adapted to the saving of separate lead and zinc products, and the Wakefield mill, near Silverton, also became a producer of the two materials. The Kootenay Ore Co. added to its ore sampling works at Kaslo, a plant for magnetic separation of zinc, which is operating with satisfactory results, in raising zinc concentrates in grade from about 36 per cent (about the economical limit of wet concentration) to 50 per cent zinc, which pays to ship. The present capacity of this plant is about 60 tons per day, but it can be enlarged at any time by the addition of more magnetic machines, its roasting capacity being already larger.

Coal and Coke—The essential decrease in coal and increase in coke, respectively should be found nearly correct, the one element of uncertainty being the production of the Western Fuel Co.'s collieries at Nanaimo, Vancouver Island. With a lack of courtesy seldom displayed by managers of important mines in British Columbia the manager of the company mentioned, both in 1904 and 1905, entirely ignored several written applications for information. However, as that company spent the greater part of the year in the congenial occupation of endeavoring to compel its miners to accept its terms, which many of the men, although compelled to at length give in, considered unjust, its mines were closed during that long period and for seven or eight months there was practically no coal mined at Nanaimo.

Reduced to long tons (to conform to the practice followed by the department of mines in regard to tonnage and to thereby facilitate comparison with the official figures when these shall be published,) the output of the coal mines of the province for 1905 was as under:

	Tons of 2,240 lbs.
Vancouver Island—	
Wellington Co.'s mines	600,893
Western Fuel Co.'s mines	89,285
	690,178
Crow's Nest Pass—	
Crow's Nest Pass Co.'s mines	746,092
Gross production of coal	1,436,270
Less made into coke	403,878
Net production of coal	1,032,392

The quantity of coke made was 271,433 tons, in the following proportions: At the Crow's Nest Pass Coal Co.'s ovens, 261,933 short tons; at Wellington Colliery Co.'s ovens, (approximately) 9,500 short tons; total, 271,433 short tons, equivalent to 242,351 long tons. There was a decrease in the quantity of coke made on Vancouver Island, consequent on the keeping closed down the whole year of the Crofton smelter, by reason of ore shortage, and the intermittent operation for a similar reason, of the Tyee Co.'s smelter at Ladysmith, also on Vancouver Island. The prospects are favorable for an increased demand for coke in 1906, for the Crofton smelter will shortly resume smelting operations and will probably be run continuously, the Tyee works may be expected to make longer runs than during recent months, two smelters on Prince of Wales Island, will want coke if it be found they can be profitably operated there, and the several Boundary smelters will together treat a larger tonnage of ore than in any previous year.

Other Minerals—These are almost altogether building materials, the only other product that in earlier years occasionally contributed to the total production having been iron ore, but of which there does not appear to have been in 1905 any output worth mentioning, though it has been announced that there will shortly be a demand for Texada Island iron ore and probably for Vancouver Island ore as well. The estimated value of building materials, as given in the foregoing tables, may be found short of actual production, since there has been a considerably larger quantity of granite and sandstone used for building purposes in the Britnsh Columbia coast cities—Vancouver and Victoria—and much more was shipped to Puget Sound points and San Francisco than in several years immediately preceding the one under review. In addition, there has been an appreciably large production of Portland cement on Vancouver Island, which is an item not available for inclusion in the mineral returns for at least 10 years. Of bricks, too, there have been more used in the province, while lime has been in much demand as well. Altogether the miscellaneous non-metallic mineral products usually included under the head of "Other Minerals" showed a considerable increase in 1905, so that the estimate of $750,000 may be found short of the actual value, which has been stated to have reached quite $1,000,000 in 1905.

CARIBOO DISTRICT

In the Cariboo district the gold placers are worked by three methods, viz., ordinary placering, hydraulicing, and deep drifting. These have already been referred to, but in order to indicate more clearly the conditions under which gold mining is carried on in the several divisions of Cariboo, some further comment will be made.

Ordinary placer mining, along lines in the early history of the district produced such sensational results as to make the name "Cariboo" known throughout the then civilized world, is still followed on many creeks, but it is not from this somewhat primitive method of recovering gold that big returns are expected.

Hydraulicing yields a large proportion of the total gold that Cariboo produces now-a-days. The more prominent of the hydraulic properties in the Cariboo division are the China creek, Bear creek, Thistle, Mucho Oro, Forest, Rose, Waverley and Mosquito creek (Flynn Bros.) All of these are reported to have done well in 1905. In the Quesnel division, the season's operations at the big hydraulic mine of the Consolidated Cariboo Hydraulic Mining Co. gave exceptionally small results in gold recovered for, to quote from the report of the manager: "Owing to lack of ample precipitation, the past season turned out the most disappointing one experienced since the equipment and opening of the property." No information is available as to the season's work in Harper's camp, Horsefly, also in Quesnel division, but it is not thought that much of importance was done here in 1905. On Snowshoe creek the Hayward and the Smith and Anderson properties again had a good season.

Three or four deep-drifting enterprises have been prosecuted for several years with much energy, and with results that promise success, although, for reasons already stated, that goal has not yet been reached by the larger of them. The Cariboo Consolidated (1904) Ltd., has been concentrating its efforts on its La Fontaine property, on Lightning creek, leaving its hydraulic property on Lowhee creek inoperative for the time being. The Slough Creek Gravel Gold, Ltd., latterly discontinued development work underground and confined its operations chiefly to draining the gravels already tapped by openings from the tunnel and boreholes. The Willow River company sank to bedrock and made preparations for more work at a deeper level than that previously opened. At Keithley creek Messrs. Veith and Borland continued to work their Onward property, with satisfactory results.

The operations of the Lightning Creek Gold Gravels and Drainage Co., also known as the Great Cariboo, may possibly have been sufficient to class it as a legitimate mining enterprise, since money has been spent in boring and other work, but the grossly extravagant nature of the printed circulars issued from its New York office do not give it a favorable appearance.

Quartz mining in Cariboo did not make much, if any, progress in 1905. Mr. B. Lasell had made a cyanide test of quartz which seemed to indicate that excellent results could be obtained from treament by that process. The ore tested was low grade, but it is thought it could be worked at a profit if on further development it were found in sufficiently large quantity. Should the wagon road to Keithley creek be constructed, as has been promised, the likely-looking quartz ledges on Snowshoe mountain will probably be prospected to an extent that will determine their value.

Nothing appears to have been done to turn to commercial account the scheelite, the discovery of which in the Cariboo district, was reported some time since. It is probable that the absence of railway transportation facilities is in the way of the development of this mineral, as well as of other resources of the district that it is believed will be available when this serious obstacle to progress shall have been removed.

An attempt was made to attract public notice to the stated possibilities for oil in the Horsefly country, but there does not yet appear to be much warrent for assuming that these give reasonable promise of developing into a payable industry.

With the provision of more capital to considerably increase the supply of water for hydraulicing, and the gradual advance being made towards success in deep drifting, it would appear that the Cariboo district will in the near future become of increasing importance as a producer of gold. That it possesses enormous possibilities may be gathered from the claim of Mr. John B. Hobson, the well known hydraulic gold mine manager, that the Consolidated Hydraulic Co. alone has leases of 500,000,000 cubic yards of auriferous gravels, and that it is safe to say it has not in these leases one-fifth of the available gravels, so that in the Quesnel Forks section alone there must be from 2,500,000,000 to 3,000,000,000 cubic yards of auriferous gravels, which there is every reason to believe are as rich as those of the Consolidated Cariboo Co.'s deposits. As has been officially remarked: "The immensity of these figures is hard to grasp but to illustrate—if ten cubic yards yield $1 in gold, then there is in the Quesnel section of Cariboo alone $300,000,000 worth of gold, but this vast amount of gold is so diluted with sand and gravel that the only possible means of extracting it is by the use of immense volumes of water under pressure; that is by hydraulic mining." It may be mentioned that, even with its all too limited water supply, the Consolidated Cariboo Co. has recovered to date gold to the value of $1,233,936.51, and that the total value

of gold produced by the Cariboo district to date is, as near as can be ascertained, about $39,000,000.

CASSIAR DISTRICT

In Cassiar district Atlin is the chief producer, in fact nearly the whole of the mineral production of this northern part of British Columbia has, ever since 1898, been contributed by the Atlin mining division. Its aggregate production to date is in excess of $3,500,000. Its highest yield in any one year was in 1899, when a total recovery of $800,000 was made. In 1901 its production fell to $300,000, but each year since then has seen an increase. Last year's total was $530,000, and it is estimated that there was a rather higher recovery in 1905.

That Atlin will in 1906 make an even better showing in regard to yield of gold may be taken for granted, unless it experience an unprecedented shortage of water—a remote contingency, by the way. With dredges and steam shovels to facilitate the handling of gravel on a much larger scale than has been possible in past years, there should be more gold recovered than during any one of the five years since the first big season's results were obtained. Dredge mining for gold has been made profitable in both New Zealand (where it is carried on on a large scale) and in California. It seems quite reasonable to look for similar success at Atlin, now that the chief difficulties appear to have been overcome.

The individual placer miner has been, to a considerable extent, superseded by the company, with its larger capital and greater facilities for economical and profitable mining. There are still creeks which are exceptions to this rule, and these have been energetically worked. New discoveries have been reported, but these have not yet been proved of sufficient value to cause any "stampedes," such as are common in some placer gold mining districts when "pay" is found on creeks not previously worked. There is one matter of especial concern to the individual miner that is noted with satisfaction, that is, the action of the provincial government in forfeiting hydraulic leases in cases where statutory requirements have not been carried out. Early in 1905 Dr. H. E. Young, M. P. P. for Atlin district, informed his constituents, through the medium of the press, that he had received assurance from the government of its intention to throw open all land which had been illegally held and to give due notice of such intention, so that all might have an equal chance of re-staking. Further, it was stated that the gold commissioner had received instructions to give two weeks' public notice of all cancellations. It is further noted that the appointment of a resident county court judge has led to the more expeditious settlement of mining disputes, while a liberal expenditure on roads and trails has materially assisted in the opening up of some of the newer parts of the district.

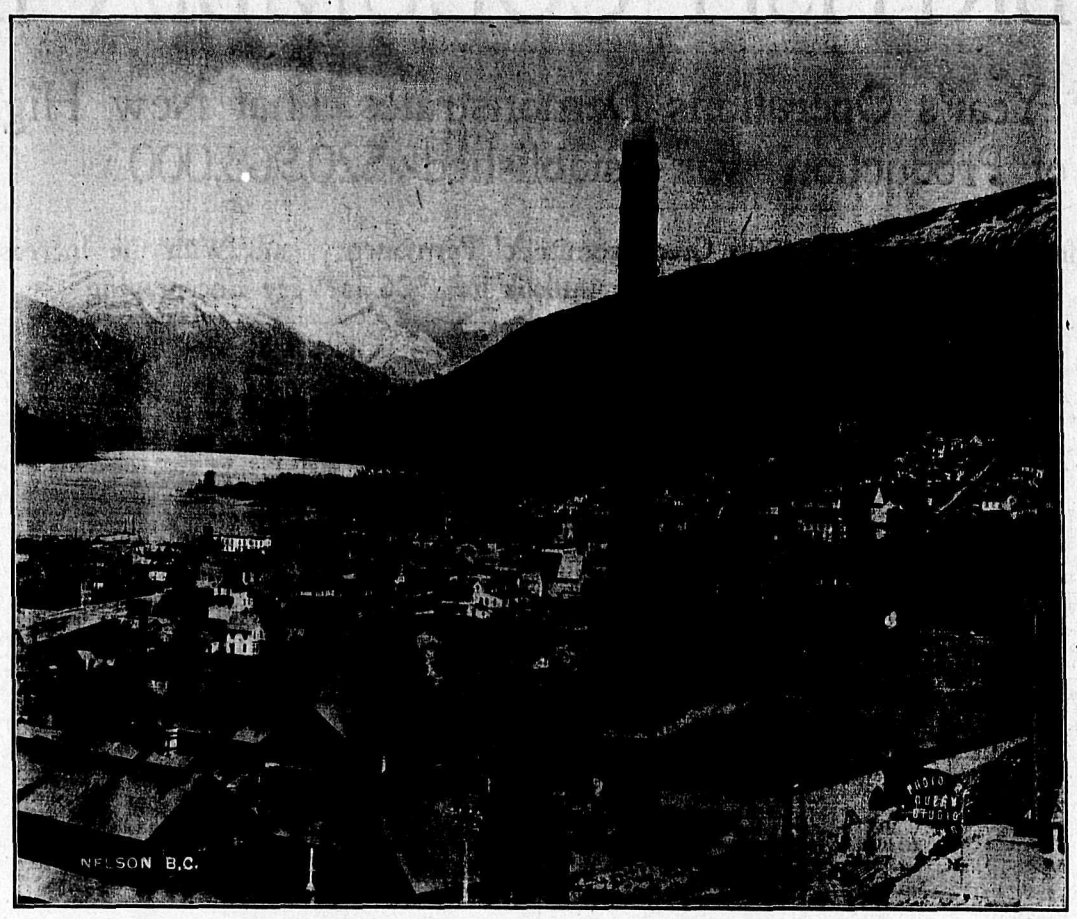
As an instance of the progress made by companies in Atlin district the following has been taken from a published statement of Mr. J. M. Ruffner, manager of the Pine Creek Power Co., and the North Columbia Gold Mining Co., which have together spent more than $500,000 in connection with their Atlin mining enterprises: "There is one thing that may be said of the district, as compared with Dawson, in Yukon territory, or Nome and Tanana, in Alaska—and that is, while our deposits do not contain such rich paystreaks as are found in those camps, we have deposits of yellow gravel, especially in the Spruce and Pine creek valley, that are really enormous in extent, and, though low in value are singularly uniform in their gold contents. The values run from 35 to 50 cents per cubic yard, in gravel banks ranging from 20 to 80 feet in depth. Speaking of our own operations, we have already opened up sufficient of the yellow gravel deposits to keep us busy for the next 30 years."

It should be noted that other companies have also made large expenditures in the Atlin mining division, in at least one instance to a considerably larger extent than that above mentioned.

Gold quartz mining, while it has had some attention, has not yet made sufficient progress in the district to add anything to the value of the mineral production. Several local residents have interested themselves in coal lands situated in outlying parts of the country, but so far as known, no important development work has yet been undertaken on these. The deposit of magnesite occuring near Atlin city and from which a bulk shipment was made to San Francisco some time since, has not been further worked, returns from the shipment made having demonstrated that under existing conditions it cannot be profitably developed.

There is not much of moment to chronicle relative to other parts of the big Cassiar district. Of the northeastern section, including Teslin, Liard, and Stikine mining divisions, little is heard, excepting occasional reports of the work being done by two hydraulic companies—the Berry Creek Mining Co., operating on Thibert creek, and the Rosella Hydraulic M. & D. Co., on Rosella creek. The former has done a deal of preliminary work in bringing in water and installing hydraulicing equipment, and is understood to now be in readiness to commence operations and to continue them so long as the season shall be favorable for such work. The latter has also been doing deadwork and, according to reports supplied to the press, may yet succeed in recovering gold from the ground covered by its leases.

The Skeena division of Cassiar has had accession of population consequent upon the announcement of intended railway construction through it to the coast. The occurrence of coal over a comparatively large area of country has been reported, and, too, the discovery of promising occurrences of metalliferous minerals. Except in a few isolated instances, though, not much development work has yet been done. Some hydraulicing on Lorne creek seems to have been the most important feature from a mining point of view. On the coast, Kitimat Arm, Observatory Inlet, Portland Canal, and Graham Island (Queen Charlotte group), have all had more or less prospecting work done on them, while Princess Royal and Gribbell island mines have shipped gold-copper ore to coast smelters. It may be expected that the greater part of this northern coast country will largely benefit from the construction of the Grand Trunk Pacific railway, and its western feeders, whenever that anxiously looked-for work shall be actively undertaken.



GENERAL VIEW OF NELSON, B. C., SHOWING SMELTER OF HALL MINING & SMELTING CO. IN FOREGROUND.
1. Ore Bins. Silver King.—2. Laboratory.—3 Ore and Coke Bins.—4. Sampling Mill.—5. Mechanical Roaster and Briquetting Plant.—6. Crusher Plant.—7. Blast Furnace.—8. Merton and Hand Roasters.—11. Boarding House

EAST KOOTENAY

In no district in the province was there such an large increase in mineral production in 1905 as compared with 1904 as in East Kootenay, the Fort Steele division of which produced lead, silver, coal and coke in greater quantities, to which advantage was added the higher price of the two metals mentioned. Nor was the advance confined simply to mineral production, for in connection with the expansion of the mining industry there was the introduction of a modern lead ore treatment process—by itself an important evidence of progress—and the installation of the up-to-date plant and machinery equipment, the Crow's Nest Pass Coal Co. put in to replace that destroyed by fire early last spring.

The particular instances of progress in mining in the Fort Steele division were the considerably enlarged operations at the St. Eugene lead-silver mine, which is by far the largest producer of lead in Canada, the commencement of regular ore production by the Sullivan group—also lead-silver mines—and the important additions to plant and equipment and increase in production at the collieries of the Crow's Nest Pass Co. The year's progress at the St. Eugene mine may be forcibly told in but few words, and in order to better show its increased tonnage its 1904 production statistics are given as well, in brackets, all figures being in round numbers: Ore milled, 130,000 tons (73,000 tons); concentrates shipped 30,000 tons (15,000 tons); lead produced 40,000,000 lbs. (21,000,000 lbs.); silver produced 1,000,000 ozs., (541,500 ozs.). In 1905 7700 lin. ft. of development work were done, bringing the aggregate of workings in the mine up to about 8 miles. Considerable additions were made to machinery and plant; important developments of new ore shoots and extensions of those previously opened up were made; and the company's net earnings amounted to about $500,000, out of which four quarterly dividends were paid to stockholders, these totalling nearly $280,000. Particulars of the progress at the other properties mentioned appear on another page.

As a result of the activity at the St. Eugene, several neighboring properties are either being worked or preparations are in progress to shortly commence work on them. These include the Aurora, Society Girl, and the enterprise that embraces a deep-level tunnel under lake Moyie to prospect for the extension of the St. Eugene leads. In the same part of the Fort Steele division as is situated the Sullivan group, the North Star has been continuing its search for new shoots of ore, but no particulars of results have been made public.

In northeast Kootenay lode mining his been restricted to a few properties, and these generally on a small scale. The continued delay in the construction of the proposed Kootenay Central railway has had a discouraging effect on mine and claim owners, who find freight charges too high under existing conditions to make it worth while taking out ore for shipment to the smelter. This applies particularly to several well-known mines in the Windermere division that have been intermittent shippers over several years. Farther northward, in the Golden division, there was not much actual mining done, the Laborers' Co-operative Mining Co. seemingly having been the only one that continued development and took out ore, albeit its production was but small. No details of the year's work in the Golden section were received, so only this passing mention of that part of East Kootenay can be made.

Placer mining has been continued on a number of creeks, but there is no reason to think that the yield of gold will be any higher than in 1904. Indeed the expectation is that it will not be so high.

The output of coal and coke was the largest in the history of the Crow's Nest Pass Coal Co., which continues to be the only shipper of these products from the district. The gross tonnage of coal mined in 1905 was 835,000 tons as against 742,000 tons in 1904 and 661,000 tons in 1903. The quantity of coke manufactured was 262,000 tons, as compared with 245,000 tons in 1904 and 168,000 tons in 1903. The exports of coke totalled 115,000 tons, those for 1904 having been 109,000 tons and for 1903 only 31,000. The percentage of increase in 1905 as compared with 1904 was: Of coal, rather more than 11 per cent, and of coke, nearly 8 per cent. The company's standard number of employees at its three collieries was: In 1905, 1,745; in 1904, 1,728; in 1903, 1,450. The total of the payrolls for the respective years was: In 1905, $1,516,008.95; in 1904 $1,419,795; in 1903, $1,370,632. Other organizations formed with the stated purpose of opening up coal measures in the Crow's Nest district, west of the Summit of the Rocky mountains, do not appear to have made much progress towards commencing production.

In southeast Kootenay little has been done in the direction of proving the value of the oil fields it is claimed exist there. One company is stated to have made a wagon road for 20 miles, erected cabins, put in a drilling machine, and otherwise prepared to do actual prospecting work. Others have limited their operations to endeavoring to sell stock, or have waited for something to turn up to enable them to do so. The amount of bona fide effort to find oil in quantity, so far as known has not increased public confidence in the commercial value

Hall Mining & Smelting Co., Ltd.

NELSON, B.C.

PURCHASERS OF LEAD AND DRY ORES

The Following Second-Hand Machinery For Sale

Jenckes Engine, 10 in. x 15 in., with adjustable riding cut off..... $450

Albion Iron Works Engine, 12 in. x 16 in., Slide Valve $375

B. C. Iron Works Engine, 12 in. x 16 in, Slide Valve $350

Solid Cast Pulley, 8 ft. 0 in. x 14 in. x 4 7-8 in. (Weight guessed at 2000 lbs.)..... $ 45

Solid Cast Pulley, 6 ft. 0 in. x 18 in. x 2 15-16 in. (Weight guessed at 1400 lbs.) $35

Split Hub Cast Pulley, 5 ft. 0 in. x 12½ in. x 6 in. (Weight guessed at 1000 lbs.) $25

Blake Feed Pump (Single), 8 in. x 5 in. x 10 in. $50

Wainwright Corrugated Flue Feed Water Heated (No. 1 W. T.)..... $65

1000 ft. 1 in. Wire Cable.

of that part of the district as a probable producer of oil.

The promised hydro-electric developments at Bull River and Elko have not yet been made. The former is reported to have been financially stranded; the latter seems to still be a paper scheme. Money for carrying out the proposed undertakings, evidently, is not yet forthcoming. But these failures, possibly only temporary, are insignificant in contrast to the important achievements above chronicled.

WEST KOOTENAY

The district of West Kootenay includes the Ainsworth, Nelson, Trail Creek (Rossland), Slocan, Trout Lake, Lardeau, Revelstoke, and other divisions. It is a big district and heretofore has easily held the leading place in mineral production in the province. In recent years, howver, it has steadily lost ground, while Yale district (chiefly the Boundary section of it) has gradually gained. The estimated production for 1905 shows West Kootenay, with $5,706,000, to now have a formidable competitor in Yale, the estimated total of which for the same year is $5,651,000. With such a comparatively small margin to the good it may easily happen that the revised and official figures will place Yale in the lead for the year just closed. Not that it matters much which part of the province leads in production so long as a steady advance be maintained, but that it is always more satisfactory to see the older and better known mining sections maintaining their own. Yet is it the common experience in mining as in other matters—"the old order giveth place to the new." Taking the several divisions in the above-mentioned order, the prominent features of the year are briefly reviewed in the following paragraphs:

In Ainsworth district, while there has not been any considerable increase in production there certainly has been progress in connection with both the mining and reduction of ores. Several mines long idle have been opened up and shipments of ore made from them, while others are being further developed with the object of making them productive. This has been the case not only at the Highland, Highlander, and other properties in that vicinity, but as well across Kootenay lake at the historic Blue Bell mine, on the south fork of Kaslo creek, and even away in the northern part of the district where the Consolidated Mining & Smelting Co., of Trout Lake, has been at work notwithstanding the distance its properties are from transportation. The installation of a plant for the magnetic separation of zinc at the works of the Kootenay Ore Co., Kaslo, was a timely advance to meet the needs of shippers of zinc ore. The completion of a concentration plant at the Silver Star Co's Cork mine, south fork of Kaslo creek, though not yet of monetary benefit to its owners, was another forward step. Last, the resumption of work—for the present, probably, of concentrating only—at the Pilot Bay smelter, after it had been closed down for eight or nine years, is a matter for congratulation. The investigations of the Zinc Commission will, doubtless, prove of eventual benefit to Ainsworth division as well as to Slocan and East Kootenay, and, incidentally, the information gained by the visiting experts concerning the lead resources of Ainsworth will probably also have the effect of increasing practical interest in the opportunities offered to turn to good account its minerals of commercial value.

Nelson division has shared in the general improvement in mining matters. The arrangement under which the Silver King was worked through the year resulted in mutual advantage to both parties directly concerned, viz., the owners—the Hall Mining & Smelting Co.—and Mr. M. S. Davys, under whose direction work was done and some 800 tons of ore shipped to the smelter. The Granite-Poorman mines, under lease to Messrs. S. S. Fowler and M. S. Davys, produced 2800 tons of ore which yielded between 800 and 900 ozs. gold and 400 ozs. silver, and the property is now looking as well as at any previous time. The Reliance Gold Mining & Milling Co. completed the erection and equipment of a mill on its May and Jennie mine, on 49-Creek, and after exhaustive tests of the Hendryx electrocyanide process together with the ordinary cyanide treatment, reached conclusions that, it is stated, will meet the requirements of its ore and lead to the recovery of a large percentage of its gold contents. Other 49-Creek properties were also worked. On Kokanee creek the Molly Gibson, now known as the La Plata mines, obtained $70,000 for further development and equipment after a year's satisfactory exploitation of the mine, erected and equipped a 75-ton concentrator, installed an air compressor and other plant, and shipped 820 tons of ore taken out in development. Nearly 3500 tons of ore were mined by the Alice Broughton Mining Co. from the Alice mine, near Creston, in the Goat River section, and from this about 500 tons of concentrates were obtained. The La France, on La France creek, and the Bayonne on Summit creek, both in what was formerly the Goat River division, continued development, with encouraging results.

The Ymir portion of the Nelson district saw marked improvement in several cases, notably at the Ymir mine, in which ore of good grade and in considerable quantity has been opened up at the 500, 600 and 1000-ft. levels, respectively. Conditions at the Ymir mine are understood to be better than for the last two years, and the outlook is that the mine will again become a profitable enterprise. The B. C. Standard Co.'s Hunter V. and Double Standard mines were leased to the Hall Mining & Smelting Co. about the middle of the year. Shipments of ore totalled rather more than 7000 tons. Values contained in about 3300 tons sent to the Nelson smelter in the latter half of the year ranged from 3 to 16 ozs silver and up to 0.12 oz. gold, though as a rule gold was much lower. Recent shipments showed a better grade than earlier ones. At Salmo the Queen and Kootenay Belle both did well. The year's output at the former was about 6,100 tons of ore, nearly all of which was milled at the Yellowstone mill. The values totalled $64,584. The Arlington, Erie, produced 1300 tons of ore averaging 2.6 oz. gold, 6.3 oz. silver and a little lead. The The Hastings (British Columbia) Exploration Syndicate, Ltd., owning this mine paid a dividend in 1905 of rather more than $15,000. The Second Relief Mining Co., owning the Second Relief mine, Erie, mined and milled nearly 5600 tons of ore, which gave an average yield in gold to the value of about $10 per ton.

The Hall Mining and Smelting Co. was able to show a profit of more than $30,000 on its operations during its financial year ended June 30, last. The total of 37,394 tons of ore received at the company's smelter at Nelson during the calendar year 1905, was 3000 tons in excess of the total receipts for 1904. The substantial improvements made at the company's works include the installation of a Merton roaster, the adoption of the combination syphon spout and matte trap designed and patented by the company's metallurgist, Mr. H. Harris, and a general betterment of the ore-handling appliances. Further, the modern preparations for putting in a process for the treatment of lead ores are well advanced, so as to make the works up-to-date in this particular as well as in others previously dealt with.

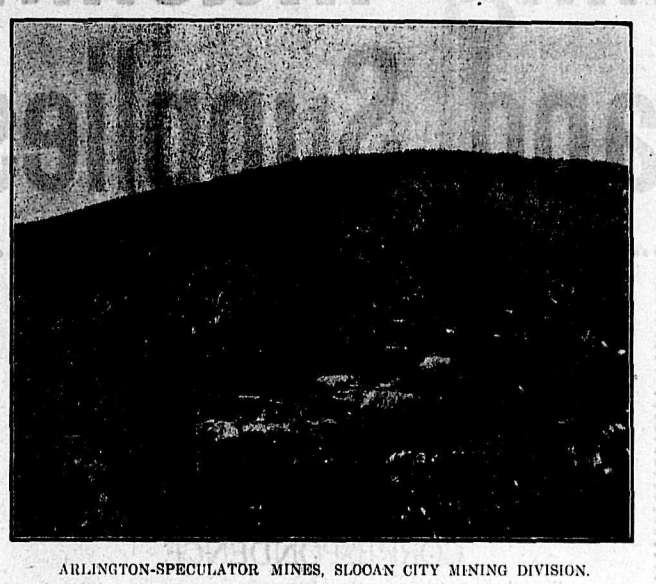
SLOCAN DISTRICT

One of the chief subjects of interest in the Slocan during the year was the work done by the Zinc Commission, appointed by the Dominion goverament, for the purpose of promoting the zinc industry of British Columbia. Another satisfactory feature was the payment of dividends out of profits from several mines. Still another matter that attracted attention was the prominence given the question of leasing mining properties, though this was not done to as great an extent as the number of unworked properties make desirable in the best interests of the district. Again, the development work being done at depth by the Rambler-Cariboo Mines, Ltd., is worthy of note. Other evidences of progress are the additions and improvements to plant, of which mention is made elsewhere, and the working of several mines with excellent results to those operating them.

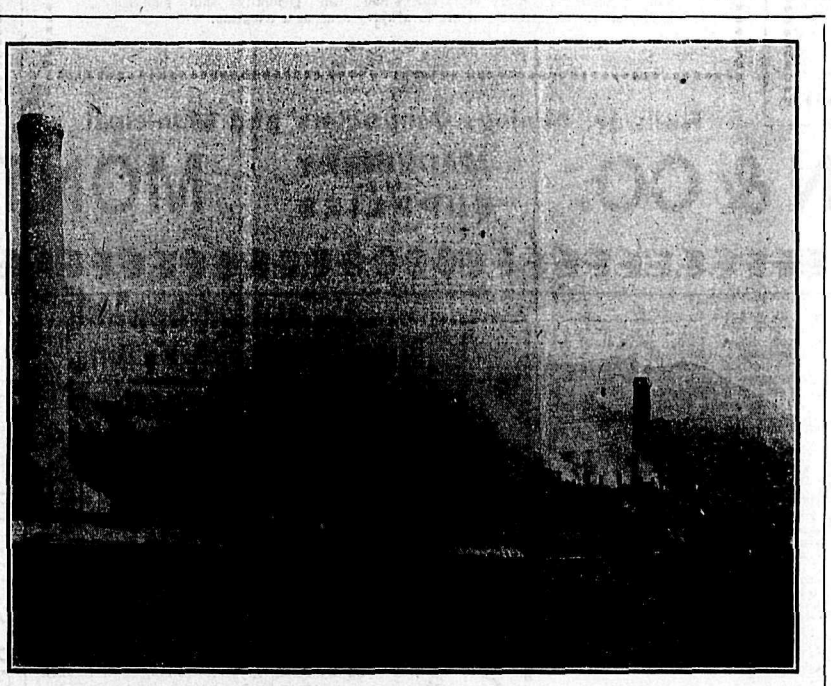
As the publication of the ore output of the Slocan has not been kept up by local newspapers, no figures are available at the time of writing to show what the approximate total production for 1905 has been. Probably it has fallen short of that of 1904 as regards silver-lead ores, but it has more than made up the shortage of tonnage in this direction by shipments of zinc to an extent greater than was expected at the beginning of the year, yet far short of what is looked for during next year. The high prices ruling for silver and lead should have stimulated more production than they did. It is not easy to point out just what has prevented the Slocan as a whole from being prosperous—it may be a combination of circumstances, yet since there has been a distinct advance in several instances, there is ground for expectation that ere long an improvement will be general.

Reverting to the subject of the Zinc Commission—this was appointed with Mr. Walter Renton Ingalls, of New York,—the leading authority in America on zinc,—at its head, and Mr. Philip Argall, of Denver, Colorado, in charge of the field work, in which he was assisted by Mr. A. C. Garde, of Nelson, formerly resident manager for the Payne Mining Co., Sandon, Slocan. Under the direction of Dr. Eugene Haanel, dominion superintendent of mines, it has been aimed to make a thorough, scientific examination of the zinc ore deposits, the character of the ores, and the best methods of putting them in marketable form, together with the prospects of establishing metallurgical treatment in the province. The subject of zinc ores with high silver content is to receive special consideration. As to the work done—Mr. Argall was ten to eleven weeks in the field, mostly in West Kootenay (although he also examined the chief silver-lead-zinc mines of East Kotenay). Mr. Ingalls spent several weeks in October and November going over the ground that had been covered in detail by Mr. Argall. The work in the field was designed to establish the conditions under which the zinc ore occurs; the conditions of mining, milling, and transportation; and the character of the various ores that are, or can be, produced. This work has been preliminary to experimentation upon methods of ore treatment now being conducted in Denver, whence large samples of the ores have been sent for the purpose. It is intended to determine by these experiments the most efficient method for the treatment of the British Columbia zinc ores. Various types of magnetic and electrostatic separators are being tested, and plans and specifications for carrying out the recommendations of the commissions are to be published at the earliest possible date, instructions having been given that no effort is to be spared to consummate the work as rapidly as is consistent with thoroughness. The conclusions of the commission are expected to have a highly important bearing upon the future of Slocan and Ainsworth especially, for in these districts there is much ore carrying a considerable percentage of zinc, and the introduction of methods that will admit of this ore being made marketable at a profit to mine owners will do much towards bringing about general mining activity and restoring prosperity to sections that several years ago were prominent factors in making the mineral production of British Columbia as large as it was when so great a proportion of the total was contributed by West Kootenay.

The dividend payers of the Slocan in 1905 were the Lucky Jim, Reco, Slocan Star, and Mountain Con. Several others paid their owners or lessees good profits. An instance is that of the Payne mine, the lessees of which did well. The leasing system is being gradually extended, towards which desirable end the Sandon Mining Standard has conducted a persistent campaign, which has compelled the attention of all concerned. The most prominent instance of development work at depth is that of the Rambler-Cariboo Mines, Ltd., which company has been continuing the year through the work of driving a crosscut tunnel which was started in 1904 and the purpose of which is to cut the vein at a depth of more than 1400 ft. Before this tunnel was commenced it was estimated that the work would take about two years and the cost be about $60,000. The tunnel has been driven with such expedition that it is expected the vein will be reached next spring. If good ore in quantity be found at this deep level the success achieved in this connection will bring about a transformation in mining some of the larger properties in the Slocan, for other mine owners contemplate doing similar work should the expectations of the Rambler-Cariboo company be realised.



ARLINGTON-SPECULATOR MINES, SLOCAN CITY MINING DIVISION.



GRANBY SMELTER, GRAND FORKS

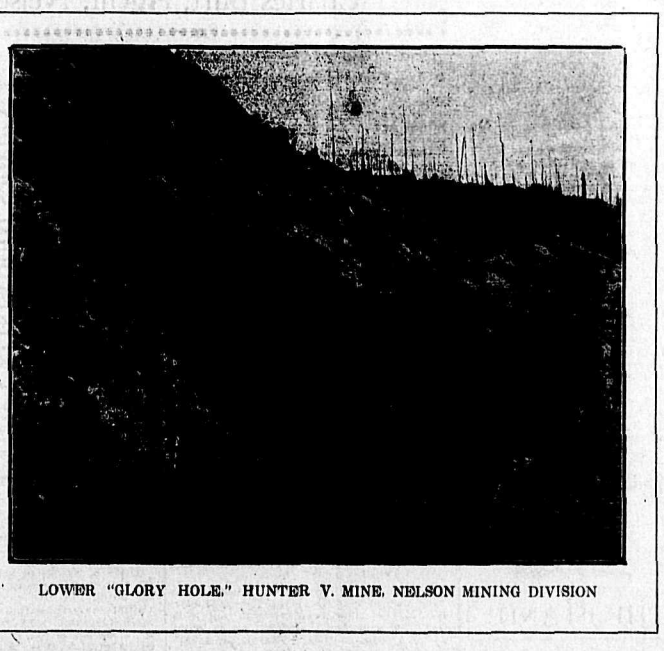
About Three Forks and around Silverton excellent results have been obtained from the working of several properties, some of them leased. Prominent among these are the Lone Bachelor, near Three Forks, and the Hewitt and Lorna Doone group, near Silverton, the latter property having shipped between 500 and 600 tons of ore averaging about 125 ozs. silver to the ton. The Hewitt is described as "looking splendid" and it certainly is maintaining an enviable reputation as a silver producer.

Slocan City division is reported to possess several mines that did well last year, notably the Ottawa, about which, though, particulars of the year's development and production have not been received at the time of writing. What is known as the "dry ore belt" is chiefly in this division and in this section are properties that, beside having already been productive, promise well for the future.

ROSSLAND

The chief mines of the Trail Creek division are at Rossland, though there are as well a few properties being worked that are situated in outlying parts of the division. The Le Roi, Le Roi No. 2, Centre Star and War Eagle—the companies owning the last-mentioned two having recently been consolidated—are the chief producers in the camp. To what extent this is so may be gathered from the following summary of the approximate production in 1905:

Mine.	Tons.
Le Roi	114,000
Centre Star	95,000
War Eagle	61,000
Le Roi No. 2	22,000
Jumbo	10,000
All other mines	13,000
Total	315,000



LOWER "GLORY HOLE," HUNTER V. MINE, NELSON MINING DIVISION

Amalgamation proposals have had much attention throughout the year, but as yet the only "merger" effected was that of the Centre Star and War Eagle, which, hawover, had for years been operated under joint mine management. A further consolidation proposal, viz., that of the Centre Star-War Eagle with the Le Roi, Rossland; St. Eugene, Moyie; and the Canadian Smelting Works, Trail, was recently rejected so far as the Le Roi Mining Co. was concerned. The differences of opinion that led to this result were mainly upon two points, viz., (1) the advantage or otherwise to be gained by permanently closing the Le Roi Co.'s smelting works at Northport, Washington, for the purpose of having the Le Roi ore, as well as that of the Centre Star-War Eagle, treated at the Canadian Smelting works, and (2) the practical dispensing with an English directorate, the intention having been to have control of the consolidated companies in Canada. Notwithstanding this decision of the Le Roi stockholders to retain the separate entity of their company, there is widespread feeling that, if consummated along equitable lines, such a consolidation would be to the benefit of all joining in it. Unfortunately, though, there is the fear that behind all the agitation for and against the scheme submitted to the Le Roi stockholders are the interests of the rival railway companies, one owning the Trail smelter for which it is desired to obtain a supply of ore sufficiently large to admit of more furnaces being continuously operated than is practicable under former conditions of about one-third of the output of Rossland mines going to the Northport smelter, and the other greatly concerned to see the Northport works secure as large a part of the Rossland ores as possible, so that its railyway may have the business of hauling the ore from Rossland to Northport, and the resultant freight traffice connected with the transportation to the coast, for Bessemerising purposes, of the copper matte produced from there ores. The matter is not yet finally disposed of, but the probabilities are that the adverse decision of the large majority who voted upon the question at a meeting held recently in London will be sustained should a poll of the stockholders be taken. It may be of interest to note that in his report to the directors of the Le Roi Co., the general manager, Mr. John H. Mackenzie, submitted that the great advantages to be derived from the proposed amalgamation were set forth under six headings, as follows: (1) A reduction in the cost of mining and exploration; (2) a substantial saving in administrative and office expenses; (3) reduction in freight and treatment charges; (4) reduction in present cost of marketing copper; (5) competent management and skilful direction of exploration work under one head; (6) the prestige and advantages of a large and powerful corporation, with sufficient capital to assure the future, backed by the support of a great transcontinental railway vitally interested in the upbuilding of a profitable mining and smelting industry in British Columbia.

Much progress was made in actual mining during the year, deeper levels having been opened than at any previous time in the history of the Rossland camp. Ore has been found in the Le Roi on several lower levels down to 1550 ft. depth on the incline, but so far no permanent ore body has been proved to occur at that depth, although shoots of high grade ore were met with on both the 1450 and 1550 ft. levels. Sinking to a greater depth is in progress, the intention being to continue the 1350 ft. level winze down to 1750 ft. and at the latter depth to prospect for ore. Nearly 5000 lin. ft. of development work were done during 1905. An experimental concentrator was put in at the Le Roi. The result of the tests made with this plant was that it was demonstrated it would not pay to mine ore for concentration. The only ore that it will pay to concentrate appears to be that taken out in the course of development and against which no mine charges are made, i.e., such ore as is too low in grade to send to the smelter, and which would, in the absence of some plant to treat it at low cost, be put on the dump.

The Centre Star produced nearly 95,000 tons of ore in 1905, and the War Eagle 61,000 tons. The footage of development work done was nearly 6500 lin. ft. in the Centre Star, and 6600 lin. ft. in the War Eagle. The diamond drill was used, some 9000 ft. of holes having been drilled in the two mines. The depth reached in the Centre Star is about 1500 ft. vertical, at which depth a level is being opened. New ore shoots on levels Nos. 4 and 8 are giving a good tonnage of shipping ore. In the War Eagle prospecting is being done at Nos. 10 and 11 levels, which are a similar depth to those correspondingly numbered in the adjoining Centre Star.

Concerning the recent amalgamation of the Centre Star and War Eagle companies, the position is that the Centre Star has taken over all assets of the War Eagle company, giving therefor two shares of Centre Star for three of War Eagle. The number of shares so transferred and to be divided pro rata among the shareholders of the War Eagle is 1,166,667. The authorized capital of the amalgamated companies is $4,666,667, of which $3,500,000 is Centre Star. The management hopes that by using one shaft for the two mines, and other economies, to effect a saving of $25,000 to $30,000 a year. It has been announced that the Centre Star in the past year earned a net profit of $448,840, and had in its treasury and in cash due, $217,254. For some time the War Eagle has been paying expenses, but little more.

The Le Roi No. 2 during 1905 produced about 22,000 tons of ore, rather more than half of which was treated at its own 50 ton concentrator. The total receipts from this ore were approximately $310,000. On the 600 foot level and the 650 foot intermediate level, the downward continuation of old shoots of ore have been exposed. Work on the 500 foot level was also successful. Some 3200 lin. feet of development work was done in 1905, and diamond drill holes to a total of more than 3000 feet were bored. Sinking from the 900 foot level was discontinued and instead, a crosscut has been driven from the 1250 foot level of the adjoining Le Roi, into the ground of the Josie, owned by the Le Roi No. 2. The company paid an interim dividend of one shilling per share on October 30.

Several properties operated on a smaller scale will be briefly noticed. The Jumbo shipped ore all this year, its output having totalled about 10,700 tons. The Spitzee has shipped nearly 5000 tons; to provide necessary funds for further development and equipment the shareholders in the Spitzee company authorized a change in the par value of the shares, which will permit of assessments being made that will total $100,000. The Velvet-Portland crushed and concentrated nearly 2000 tons of its second class ore and then closed down. The White Bear company shareholders agreed to an arrangement for raising money by assessment. The mine was unworked for part of the year. Some 4300 tons of ore were raised, and three quarters of that quantity was treated at the company's mill and concentrating plant. A 100 h.p. induction motor was installed to drive the power plant. The Cascade-Bonanza, situated in the outlying Norway mountain part of the Trail Creek division, was operated under bond for a while by some Philadelphia people, who sent 15 tons of ore to the smelter. The Inland Empire, in the same section, was bonded by New York men, who did some work and made a test shipment of ore.

The structural survey of a part of Rossland camp, by members of the geological survey of Canada, was proceeded with, Messrs. R. W. Brock, W. H. Boyd and A. G. Young, having been engaged on it during the field work season. The Centre Star and War Eagle mines were closely examined and considerable progress was made towards obtaining sufficient data for the preparation of the map to be issued in connection with this work.

LARDEAU

Camborne camp in northern Lardeau, made fair progress in 1905. The Eva Gold Mines, Ltd., did more than 1300 feet of development work on its Eva group, and mined 12,000 tons of ore, all but about 600 tons of which was milled at the company's 10-stamp mill at Camborne. Some $50,000 in gold was recovered, the average value having been rather more than $5 per ton. The installation of an air compressor and use of power drills in the mine, and the enlargement of the stamp mill, are having the consideration of the management of the company. The Beatrice shipped high grade galena ore and did a lot of development work. The Silver Dollar obtained an air compressor, which is at the mine; a mill building has been erected on the property and the requisite machinery and other equipment is to be installed as soon as it can be got in. The Camborne Gold Mining company has been endeavoring to raise sufficient money to admit of replacing its buildings and aerial tramway destroyed by fire some time since and for development of the Goldfinch properties. The Mammoth, owned by the Edward Baillie Syndicate of Rossland, is being further developed and its shoots of high grade ore opened up for shipping purposes.

The Ferguson Mines, Ltd., has for some time been engaged in a comprehensive scheme of development of its Silver Cup mines and has encountered high grade shoots of ore apparently of good size. The Metropolitan company of Minneapolis last season continued the exploration of its Trinne property. An undertaking that may lead to important discoveries of ore is the driving of a 4000 foot tunnel into Nettie L. mountain, at considerable depth. The Chestnut Hill company has been continuing to operate the Lucky Boy, situated near Trout Lake. Other than the output of this property there was not much ore produced in this vicinity in 1905. Several claims in Poplar camp had development work done on them, but no information was supplied as to its extent or the results obtained.

KAMLOOPS

The Prince Mining & Development company of Revelstoke, has been opening up its Standard mine, in Standard basin, north of Revelstoke, by driving on the 400 and 500 foot levels, some 200 feet apart on the lead. Crosscuts made in ore show a width of 25 feet on one level and 22 1-2 feet on the other. The drifts are being extended and this development continued. An interesting bulletin on this section of the country, prepared by Mr. Herbert Carmichael, provincial assayer, and published by the department of mines, was issued a few weeks ago.

In the Big Bend there has been the customary amount of placering and hydraulicing on several of the creeks. Near Ashcroft, in the Highland valley section, the Transvaal group of claims is under bond and development. About Kamloops there was not much progress made outside of that on the Iron Mask, at which a small hot blast smelting furnace was installed. Although no information has been given out by the company operating this mine, it is known that a lot of good grade ore has been extracted during the past year and that the concentrator has been running.

LILLOOET

There is not much to say about the Lillooet and Clinton divisions of the Lillooet district. An attempt was made to divert the waters of Cayoosh creek, so as to get at the bed of that stream at a part where it is thought there is gold enough on bedrock to pay well for the work involved, but it is stated that the work undertaken has not yet been successful in accomplishing the object in view.

Bridge river did not see much activity, the mining enterprises in that locality, upon several of which money has been expended, having been apparently abandoned, at any rate for the time being.

Dredging on the Fraser at Lillooet has been variously reported as having proved profitable and the reverse. A winding up order was made against one dredging company; yet the statement has been reiterated that the dredge has been recovering gold in quantities more than sufficient to pay ordinary expenses.

From a source, believed to be reliable, the following has been received: "From what I saw at Lillooet recently I am satisfied that notwithstanding all the drawbacks and setbacks which the district has always had in anything relating to mining, whether quartz mining, dredging or ground sluicing, there is still, under proper management and freed from swindling, a magnificent field for both enterprise and capital in the district of Lillooet"

In the Clinton division the gold returns of any value have been obtained by desultory mining, principally by the Chinese, from the margins of that great ground sluice, the Fraser river. The river runs through the Clinton division for more than 60 miles, and there is little room for doubt that there is much gold yet to be recovered by properly constructed dredges, operated by men who thoroughly understand these machines and the river they have to deal with. But such enterprises must be financed on a sound and honest basis, without which essentials any attempt to dredge the Fraser river can only end in failure.

BOUNDARY

In no other part of the province, save in the Fort Steele division of East Kootenay alone, where the St. Eugene added so largely to the mineral production of the district, has there been so much progress in connection woth the mining industry as in the Boundary section of the big Yale district. Even admitting that Fort Steele made, in 1905, a larger showing in point of value of its mineral products than did the Boundary, the comparison is certainly largely in favor of the latter when tonnage of metalliferous minerals is taken into account. Yet with more than $1,500,000 in lode gold to its credit, and about $1,000,000 in other metals, the Boundary occupies the pride of place in the production of metalliferous minerals in British Columbia. And the advance is along lines that make for permanence, which is so much more in favor of the district than if it were short lived. The tonnage of ore produced is indeed large, about 320,000 tons, with the output steadily increasing, so that the yearly output should not hereafter be less than 1,000,000 tons, which is the goal many had hoped to see the district reach in 1905.

Year by year Boundary becomes better known among mining men and metallurgists accustomed to big operations and successful achievements, and never to its discredit. Last summer its visitors included the members of the American Institute of Mining Engineers, among them men skilled in the various branches of geology, mineralogy, and metallurgy. Their stay was necessarily a brief one, for they were en route to the Yukon territory and could not devote much time to visiting any one place no matter what its merits or attractions. The editor of the Bi-Monthly Bulletin of the Institute, in the course of his account of the excursion made to British Columbia, Yukon and Alaska, made this observation in his brief notes on the visit paid to the Granby company's big mines in Phoenix, Boundary district: "Without attempting here a complete scientific account of these remarkable deposits, it may be said that they contain immense masses of sulphide ore, carrying a small percentage of copper, with values in gold and silver which become important when large quantities of ore are economically treated. The weight of ore shipped by the company's mines during the year, ending June 30, 1904, was (after deducting moisture) 514,387 tons. A rough calculation, based upon the figures already quoted in connection with the smelter, indicates that this ore yields somewhat less than 1.5 per cent of copper, 30 cents worth of silver and $2 in gold per ton. It is self evident that such an ore could not be mined, transported and metallurgically treated with profit except by a complete combination

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The striking features of the year's progress in the Boundary are the extension of the scale—already large—upon which mining is carried on in the chief copper-gold mines, and the considerable additions to power machnery and plant both at the mines and at the smelters. The most modern machines and economical methods of mining, treating and handling the ores are adopted, and the general results achieved are a surprise to many who do not expect to find mining and smelting done neither so extensively nor cheaply as is the case at the leading mines in the Boundary district.

Elsewhere are given particulars of the changes and additions made, prominent among them being those at the Granby company's mines and smelter. The B.C. Copper company has extended its operations, while the Dominion Copper company, which has acquired the property and assets of the Montreal & Boston Consolidated Mining and Smelting company, is also preparing to operate on a large scale.

The aggregate tonnage of ore produced by the Boundary mines is now in excess of 3,400,000 tons. Yet up to the end of the first half of the year 1900, the total of ore shipped was less than 5000 tons. The district has indeed made advances in its mineral production since then. With the enormous tonnage available for shipment, and the increasing enlargement of smelting capacity, it is not surprising that the Great Northern railway company has constructed a branch line to the Granby mines nor is it likely that much time will elapse ere the same company also makes connections with the two smelters in the Boundary creek valley, those at Greenwood and Boundary Falls respectively. So favorable a field from a freight point of view, was one that the United States company, with its lines already at its gateways, quickly entered when the time became ripe to compete with the Canadian Pacific railway for a share of the traffic that is obtainable.

To others besides railway companies the Boundary offers inducements to make large expenditures of money, for the purpose of eventually sharing in its industrial prosperity. Next to railway construction the most important recent undertaking is that of the West Kootenay Power & Light company, which is hastening on the completion of two electric transmission lines from Bonnington Falls to Greenwood, so that it may soon be in a position to deliver pwer to mines and smelters in the Boundary. Each of these lines will be capable of delivering 7000 h.p. at Greenwood, and to make ample provision for the probable increased requirements of the future, the new generating station on the Kootenay river is to be equipped with a plant for generating 16,000 h.p. The Boundary not long since experienced difficulties and incurred losses consequent on a shortage of power, but after the completion of the power system now being put in, it is not likely to again have trouble in a similar direction. Until the new system shall have been completed, power will be obtainable from the existing generating station on the Kootenay river, which supplies Trail and Rossland.

A brief reference, before passing on, to the high grade mines of the Boundary. Several of them have done well in a small way. Others, as might be expected, have not been equal to providing their own way, as would have been necessary to keep them working, for there was in several instances little or no capital provided with which to develop them until sufficient ore could be mined to keep things going. Of the twenty or more small gold-quartz claims that have had more or less work done on them during the last year or so, fully half of them are among the number either pay their own expenses or give promise of doing so. Though not a high grade mine, there is one property again being operated that has long been idle, viz., the Jewel, mention of which was omitted from the review of the Boundary. In 1902 it produced about $25,000 worth of ore, and when it was closed down there was no lack of ore in its stopes and levels, so it should make one more to swell the production of the district.

Both the west fork and north fork of Kettle river are having more development work done on them than in past years, and with promise of some of the properties becoming producing mines. The coming year should see much progress in both these districts. Camp McKinney alone of the Boundary camps is almost entirely neglected. Yet it is thought it will again be given a trial, as it well may be, for it had one mine that paid nearly $550,000 in dividends ere it was shut down, and it may be that another such will be found there to give life to that old and well known camp.

Beyond the Boundary proper, in the southern Okanagan, Fairview is another camp that in years gone by enjoyed prosperous times. Like McKinney it is out of favor now, but it has big shoots of low grade quartz ore, and another turn of the wheel may again see its fortunes changed for the better.

SIMILKAMEEN

Railway construction has done much to encourage many to turn their attention to the Similkameen, big in area and with big potentialities. The Great Northern is proceeding with the construction of the V., V. & E. line from the international boundary on up the Similkameen river. The Canadian Pacific is entering the district from the north, starting at Spence's Bridge, and going thence through the Nicola country. It is freely stated that it will push on its construction southward to Princeton during 1906. So the Similkameen, so long to some extent practically a terra incognita, is to be opened up to the advance of trade and industry, and not least among the latter will be mining.

The widely talked of Nickel Plate mine at Hedley, has had its first whole year of production, that is as regards period of time. Shortage of water, and consequently of power, may have occasionally prevented the operation of the Daly Reduction company's stamp mill, and so interfered with the regular maintenance of ore output from the Nickel Plate. No official statement has yet been made public showing what was the total tonnage of ore from the mine, that is the quantity actually mined and treated during 1905, but this may be safely asserted, it was unlikely to have been as great in either quantity or average value as many assume. Still the output of this mine forms a welcome addition to the mineral production of the province, the more so since it stands alone in a large district as a producer. It has been announced that additions are to be made to plant and machinery of the mill at Hedley, for the purpose of providing for treatment of a bigger tonnage of Nickel plate ore.

The British Columbia Copper company has been developing two groups of claims in the Similkameen. Of these the Sunset group on Copper mountain is the better known. It can hardly be said that this property has anything like come up to the expectations of its over sanguine owners in earlier years. It may be that the B. C. Copper company will take up its bond on this property, but, on the other hand, it would not be surprising to learn that the property does not give promise of becoming a steady and permanent producer. There are several other and less known properties in the district upon which much work has been done, and which have showings of ore that appear to warrant their being extensively prospected, but as a rule development has not been carried down to any considerable depth.

Aspen Grove and Aberdeen camps were the subject of a report by Mr. Robert A. A. Johnston, of the geological survey department of Canada, which report was published by the department in 1905. The coal lands of the Coldwater, Nicola and Quilchena sections of the upper Similkameen have been examined by Dr. R W. Ells, one of the coal geologists of the geological survey, while Dr. H. S. Doole, another well known expert on the geology of coal, also visited these parts last autumn. There has been more enquiry for the coal lands of the Nicola and surrounding country the past year than probably in any previous time, and there has been more testing by drills in prospecting these lands. With the opening of the Spence's Bridge-Nicola railroad a few months hence, there will arise a local demand for coal, so that opportunity will soon be given to prove the size and quality of some of the seams occurring in these parts, and at the same time to find a market at hand for such coal as shall be taken out in the course of development.

MAINLAND COAST

Chief among the mining properties of the lower mainland coast is the Britannia, situated about 30 miles from the city of Vancouver and within a short distance of the shores of Howe Sound. The occurrence of immense bodies of mineralized rock on Britannia mountain has been known for six years, but not until the autumn of 1905 was the work of opening them up and shipping ore undertaken systematically and with a force sufficiently large to enable an output of 200 to 300 tons of ore per diem being kept up regularly. There occur here several very large surface exposures of ore, on the Jane, Mammoth Bluff and Fairview properties, respectively. These are included in the holdings of the Britannia Copper Syndicate Ltd., which has erected a large crushing and concentrating plant at Britannia Beach and provided transportation facilities by putting in an aerial tramway between the mines and the concentrator, a distance of 16,800 feet, a little more than three miles. The magnitude of these ore showings may be grasped when it is mentioned that the Mammoth Bluff exposure is about 600 feet long, it has an average visible height of 200 feet from its exposed base and an average visible width of 150 feet. A geologist who reported on the geology of Britannia mountain wrote thus of these ore showings: "In Britannia mountain are ore bodies which rank with the largest and best in the world. The practical man has measured up 2,000,000 tons of workable ore; the theoretical man sees 10,000,000 tons and feels very sure of his ground. With the natural facilities at hand and the proper equipment, a conservative estimate of the profit per ton of this ore is $3, or $30,000,000 for the whole. The profit represents less than one third of the actual value of the ore, or in other words, $100,000,000 as it stands in the mountain. It is sufficient to say that the extraction of this great wealth means he centering here of a copper camp unequalled on the Pacific slope."

The larger shareholders of the Britannia Copper Syndicate have organized the Britannia Smelting Co., Ltd., purchased the smelter at Crofton, Vancouver island, appointed Mr. Thomas Kiddie general manager of the works, and are now preparing for a long, and it is hoped, a profitable run of the furnaces.

A recent discovery is a large deposit of copper-gold ore that in size bids fair to rival the Britannia. The property is on Fitzsimmons creek, about 40 miles inland from the head of Howe Sound. A group of six claims has been acquired by the United Verde Syndicate, which includes a number of capitalists who organized for the purpose of securing the property. The find is of too recent a date to admit of much work having yet been done, but surface prospecting has shown that there is a great mass of mineral here.

There are numerous mining properties scattered along the mainland coast and islands north to the northern boundary of British Columbia. Some of these are ore shippers on a small scale. A few of them give promise of becoming mines.

ON THE ISLAND

On Vancouver island the year's mining has not been a favorable one. The coal mines together show a decreased tonnage for 1905, caused by the seven months' strike at the Western Fuel company's collieries at Nanaimo. The Wellington Coal company's Extension and Comox collieries show a combined increase in output of 27,000 tons, but this was but a very small set-off against the big decrease caused by the cessation of production at Nanaimo. The coal measures of Vancouver island were the subject of examination and enquiry on the part of Dr. Poole of Nova Scotia, whom the geological survey department sent out to gather and compile information on this subject.

The long continued yet, thus far, fruitless exploration for ore at depth in the Tyee gold-copper mine, Mt. Sicker, Vancouver island, is a matter of general regret among many on the island. It seems singular that with so large and valuable a body of ore at and above the 200 foot level no shoot of ore of importance has been found below that level. The output of the mine for the year was about 32,000 tons, the cash returns from which were $97,000. The Vancouver Island Mining & Development company, which also owns mining property on Mt. Sicker, similarly has met with little success in its efforts to discover at depth ore bodies of considerable size. At Koksilah mountain, 12 miles from Mt. Sicker, a Victoria syndicate, known as the King Solomon Mines, has opened up a large body of ore that carries excellent values in copper, with a little gold and silver, and a commencement has been made to haul ore to the railway, three miles away, for shipment to the smelter. There are several properties on the west coast of Vancouver island that have made occasional shipments of ore, but as a rule they are idle at present. At Quatsino Sound the June group is being developed. Near this property is the Peerless, on which occurs a body of zinc blend. A few weeks since the sale of the Bentley group of iron claims, on Vancouver island was reported.

A general shortage of ore prevents the Tyee Copper company's smelter at Ladysmith, from being regularly run, but it is encouraging to find that more ore is being received from southeast Alaska for treatment at Ladysmith.

If the past year's mining operations on Vancouver island cannot be said to have been entirely satisfactory there is every prospect of a marked improvement during the present year. It is well known that the Canadian Pacific Railway company proposes to engage in vigorous and comprehensive schemes for the opening up of the island and the exploitation of its many rich resources. A branch railway in the Alberni district is one of the projects under consideration and in the event of its being constructed, there will be a decided renewal of interest in the mineral deposits of that section.

There is reason to believe, too, that the Western Fuel company will largely increase its output in the coming months. The California coal market is reported to be more facorable than for some time past so far as island coal production is concerned. Australian importations are decreasing and it is reasonable to infer that there will be a corresponding increase in the demand for the product of the Nanaimo and Ladysmith collieries.

The foregoing general review in some measure covers most, if not all of the sections of the province. It may not be amiss to close with the quotation of a few words spoken by the premier of British Columbia, Hon. Richard McBride, who is also minister of mines for the province, upon his return recently from the east. He said: "While I was in New York lately I met several prominent mining men. All spoke well of British Columbia; in fact some of them did not hesitate to say that in the not far distant future we may expect to have within our provincial limits the most extensive mining operations which the Pacific coast has ever known."

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ANNUAL MINING REVIEW

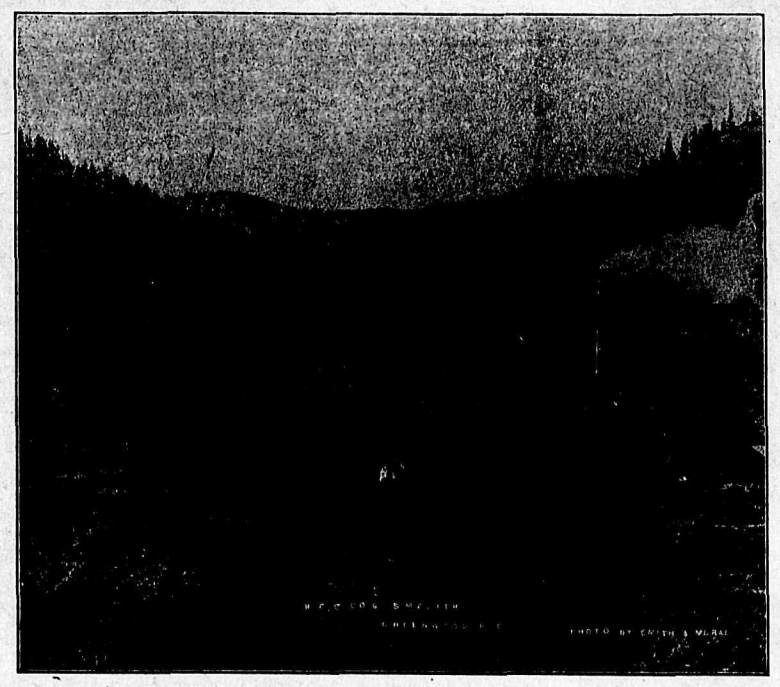
THE DAILY NEWS

SECTION NUMBER TWO

VOL. 4 NELSON, B. C., MONDAY, JANUARY 1, 1906 NO. 214

RECORD OF THE SMELTERS AND SMELTING INDUSTRY

There can be no doubt that the smelting industry of British Columbia is developing very satisfactorily, both as regards the gradual enlargement of treatment capacity of the various smelting works in operation in the province, and the metallurgical practice followed. The advances made and the improvements effected should be freely conceded to be the more creditable under the circumstances that smelting in the province is not confined to the reduction of only one class of ores. Copper, lead and zinc ores are all included. Even the refining of gold and silver is done, though only to the limited extent required in order to complete the recovery of the precious metals contained in the silver-lead ores treated by the electrolytic process at the Canadian Smelting works at Trail.



GENERAL VIEW OF B. C. COPPER CO.'S SMELTING WORKS

Looking over the province today it is noticed that the number of smelting works actively employed or being prepared for employment, in the reduction of ores is greater than at any previous time in the history of mining and smelting in British Columba. Taking the districts in rotation the following is found to be the position:

At Marysville, East Kootenay, there is the lead smelter of the Sullivan Group Mining Co., with its modern use of the Huntington-Heberlein process of roasting lead sulphide ores.

In the West Kootenay district there are the several smelting works at Pilot Bay, Nelson, and Trail, respectively. The Canadian Metal Co. only recently acquired the Pilot Bay smelter, which ten years ago caused the mine-owners of the Slocan to look forward with confident expectation of a long period of activity and prosperity for the mining industry of that part of the province. But that smelter was then a few years ahead of its time, for the difficulties it experienced in obtaining suitable dry ores for fluxing purposes, and good coke and coal at reasonable cost, together with the fact that the prices of the metals it was designed to produce fell below the figures at which it was practicable to operate under the other disadvantageous conditions, combined to render it unprofitable. Today the plant is being brought up to date, and the ensuing year should see the foundation laid at Pilot Bay of a smelting industry more prosperous than looked for under even the most sanguine expectations of Messrs. Edwin W. Herrick and A. B. Hendryx, principal stockowners in the now defunct Kootenay Mining & Smelting Co., who with great energy and determination launched in the early nineties the first smelting enterprise of southern Kootenay.

At Nelson, the Hall Mining & Smelting Co. is keeping pace with the times, by modernizinz the works that Mr. Paul Johnson—now pioneering in the smelting business at Prince of Wales Island, southeast Alaska— designed and built in 1895. Here, too, improvements are being made; methods and processes are being changed where deemed advisable and advantage is being taken of the opportunity present favorable conditions present for placing this establishment on a basis that will admit of its holding its own in the competition that is sure to be met with as the mining and smelting industries expand.

At Trail the Canadian Smelting Works is adding to the smelting capacity of its smelter and enlarging and improving its lead refinery to an extent involving a large outlay. Larger furnaces, up-to-date processes, improved methods of handling ores, in its reduction works, together with extensions in its lead refinery, that stand out in strong and pleasing contrast to the equipment and methods—no doubt then the latest practice introduced by the British Columbia Smelting & Refining Co., which was organized in 1895, with Mr. F. Aug. Heinze as president, and Mr. H. C. Bellinger as general superintendent, and late in that year entered upon the construction of the smelter at Trail, to the great satisfaction of Rossland mine owners, who then were at much disadvantage in getting their ores smelted. In passing it may be interesting to compare the rates under the first contract made by Mr. Heinze for the smelting of Le Roi ores with that recently made by Mr. W. H. Aldridge, now general manager of the Trail smelter. In 1896 Mr. W. A. Carlyle, then provincial mineralogist, in his Bulletin No. 2, "Report on the Trail Creek Mining District,' in his "Early History" chapter, had the following: "Mr. F. A. Heinze, the head of a smelting works in Butte, Montana, sent in two men to go over the ground, with the result, after much negotiating, that he made a contract with the management of the Le Roi mine that they should supply him with 37,500 tons of ore on the dump, which he would pay for after the shipment and sampling of each lot, deducting $11 per ton for freight and treatment charges; and also 37,500 tons on which the charges should be at the lowest rates obtainable in the open market. With this amount of ore contracted for, a land grant from the provincial government and a bonus of $1 per ton smelted from the dominion government, Mr. Heinze erected the Trail smelter and built the railway from the smelter to the Le Roi mine." A few weeks ago press despatches from London were to the effect that the Le Roi Mining Co. and the Canadian Smelting Works had entered into a contract under which the former is to receive from the latter a freight and treatment rate of $3 per ton.

CANADIAN SMELTING WORKS, TRAIL, B. C.

In Yale district, which includes the Boundary, Similkameen and Kamloops, there are four smelters—at Grand Forks, Greenwood, Boundary Falls, and Kamloops. That in the last mentioned camp is only a small experimental plant, stated to be of a capacity of but 50 tons daily and not designed for such large operations as those in use in the Boundary. The others are works that are of considerable interest to metallurgists, especially as they achieve results in tonnage that surprise most smelting men until they get to understand the specially favorable conditions under which these smelters are operated.

The Granby Mining, Smelting & Power Co.'s smelter, at Grand Forks, Boundary, which was designed and erected by Mr. A. B. W. Hodges, who is still its manager, may be said to be without an equal in Canada in respect of its total capacity, its daily tonnage, its low costs, and its labor saving methods and appliances. Its progress over a number of years is indicated by the following summary of dates and events.

August 21, 1900—First furnace blown in.

October 13, 1900—Second furnace blown in.

January 14, 1902—Copper converters started.

February 27, 1902.—Third furnace blown in.

March 17, 1902—Fourth furnace blown in.

November 5, 1903—Fifth furnace blown in.

November 6, 1903—Sixth furnace blown in.

November 8, 1904—Electric furnace chargers started.

September 19, 1905—Seventh furnace blown in.

November 10, 1905—Eighth furnace blown in.

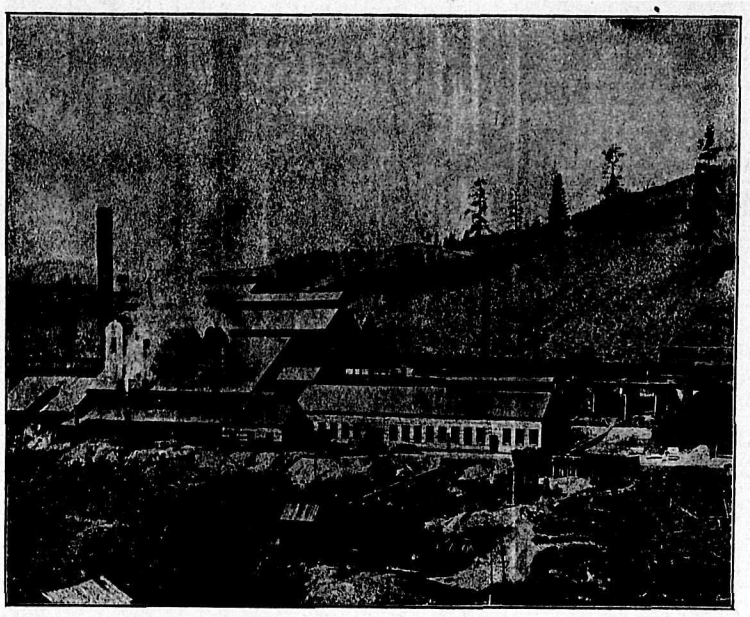
The British Columbia Copper Co.'s smelter at Greenwood, Boundary, was designed and built in 1899-1900, by Mr. Paul Johnson. Its first furnace was started on February 17, 1901; the second was completed early in 1902. In the summer of 1904 a Bessemerising plant was added, since which time the company has converted its matte into blister copper at its own smelter instead of continuing to send it away for converting. Recently announment was made of the intention to reconstruct and enlarge the works, which considerable improvement may be expected to be shortly commenced under the direction of the manager, Mr. J. E. McAllister.

The Dominion Copper Co.'s smelter, at Boundary Falls was built by a speculative company, which passed out of existence before the first furnace was blown in. The latter event took place under the regime of the Montreal & Boston Co., on June 19, 1902. On May 25, 1903, a second furnace was started, and afterwards the water jackets and other parts of a third were purchased, but this furnace has not yet been erected.

It is pretty well understood that the Dominion Copper Co. will either thoroughly overhaul and remodel the present smelter or erect a new one at Midway or in the vicinity of Grand Forks.

On Vancouver Island there are two smelters—at Ladysmith and Crofton, respectively. The former was designed and built by Mr. Thomas Kiddie for the Tyee Copper Co. Although but a small plant in comparison with some of those above mentioned, the Ladysmith smelter attracts particular notice among metallurgists, for several reasons. First it was built to treat an ore of a refractory nature (averaging about 38 per cent barium and 7 per cent zinc); next, its practice in the roast yard is unusual in connection with the building up of the ore piles and the roasting of ore fines in bricks; again, it is using a hot-blast system invented by Mr. Kiddie and proving successful under conditions ensuring greater economy and effectiveness.

The Crofton smelter was built by the Northwestern Smelting and Refining Co., of which Mr. James Breen was general manager, and Mr. H. C. Bellinger, metallurgist in charge. It was recently purchased by a newly organized company—the Britaania Smelting Co.—and is being altered and improved under the direction of Mr. Kiddie, who lately resigned the managership of the Ladysmith works to take charge of the larger establishment at Crofton. For several weeks ore has been arriving at Crofton, and early in the new year one of the furances will be blown in. There is at this smelter a furnace known as the Garretson furnace, designed to produce blister copper from ore at one operation. While this result cannot yet be said to have been achieved, there is no doubt that an extremely high grade of copper matte can be produced, under favorable conditions.



GENERAL VIEW OF THE SMELTER AT BOUNDARY FALLS

HALL MINES SMELTER

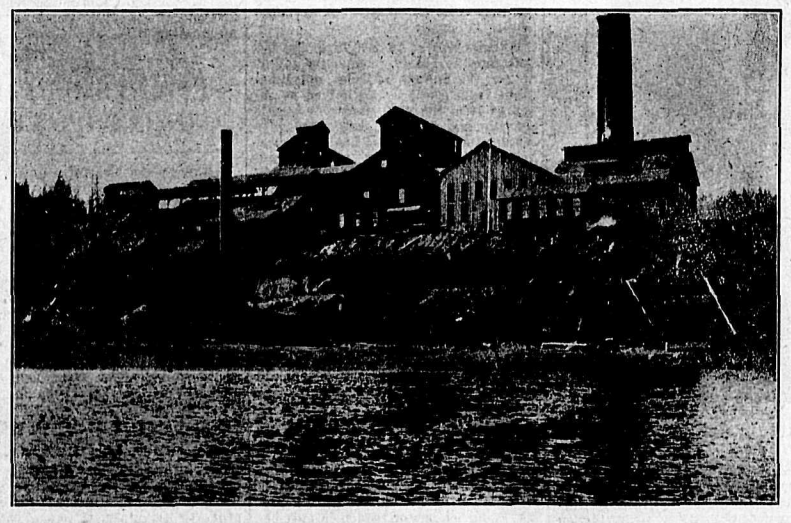
The Hall Mining & Smelting Co.'s smelter, at Nelson, on the west arm of Kootenay Lake, is advantageously situated for the receipt of custom ores, which are brought to it from mining camps in all directions from Nelson, which is the distributing point for the greater part of the lower Kootenay and Boundary country. To the north lie Ainsworth, Slocan and Lardeau districts; to the east there are the several mining camps bordering the main Kootenay lake, and, farther away, the chief silver-lead sections of East Kotenay; to the south are Ymir, Salmo and Erie camps, while to the west are the important mines of Rossland and the Boundary. With all these mining districts Nelson has daily communications, either by rail or water.

The Nelson smelting works were built in 1895 for the purpose of smelting the produce of the Silver King mine, which is a copper-silver ore. Several years later, the supply of copper ore having meanwhile practically ceased, the furnaces were adapted to the requirements of lead ores and dry ores, and the work of the smelter has since been almost altogether confined to the treatment of these ores. The works and plant include a sample mill; well-equipped laboratory and assay office; two blast furnaces, with blowers; hand and mechanical roasters, etc.

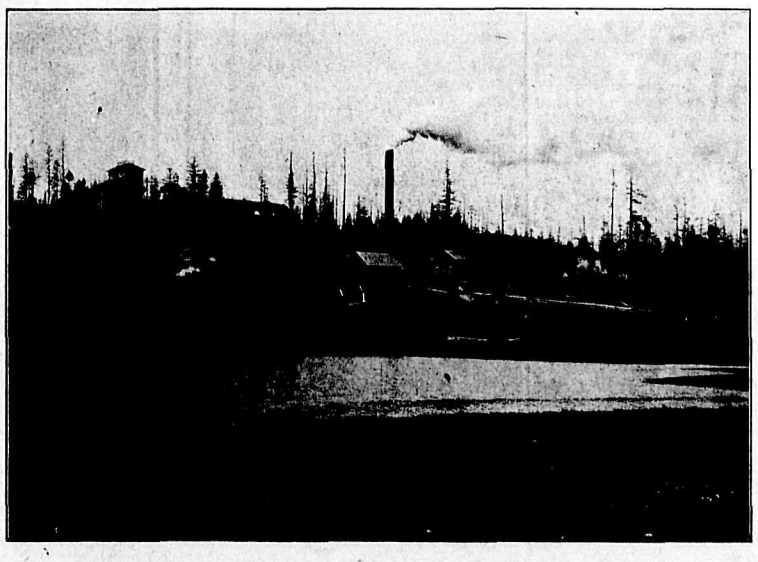
Recent improvements comprise the completion of installation of a Merton roaster; the putting in of an entirely new automatic sampling and fine-crushing plant, with an automatic ore-bedding system; an automatic haulage system, the erection of a number of gravity bins, and extensive changes in levels to effect savings in labor. The installation of a new desulphurisation process has been commenced, and this will be completed in due course.

The Merton roaster was erected at these works for the purpose of roasting ores for lead smelting. The furnace is compact, occupying a floor space of only about 9x35 ft. It has three decks in the body of the furnace and one exterior hearth. The great advantages claimed for this furnace are that the system of rabbling is such as to lift and turn every particle of ore with every revolution, exposing it more thoroughly to oxidation than any other system. Further, the exterior hearth makes it possible to obtain any degree of heat or oxidation. After having made the changes found to be necessary—such as water-jacketing all shafts and arms, and substituting more suitable rabbles—this furnace has done here fairly good work on a great variety of ores, from pyrite to galena concentrate carrying 60 per cent lead. The fault remaining with the furnace is that it passes material too rapidly through, allowing too short a time in which to thoroughly roast difficult material. Its capacity is from 10 to 15 tons daily, according to the charge. It is very economical in fuel, while its labor costs are not high. When well equipped, maintenance is light.

Another improvement is a combination syphon spout and matte trap, for use on blast furnaces. This device is the invention of Mr. H. Harris, A.R.S.M., metallurgist at the Nelson smelter. It consists of an L shaped cast-iron box about 30 in. long, lined with tile, or water-jacketed to suit the conditions. This is placed in free communication with the tap-hole of the furnace. The walls are deep enough to afford a sufficient head to retain the amount of slag and matte desired in the furnace. Placed in this box at right angles to the face of the tap jacket is a water jacket partition, below which is an aperture a few inches in height and which serves to laterally divert the matte. The manner of operation cannot well be described in the absence of plans and sections for reference. Sufficient to say that its operation requires but little skill or attention, and it will run for two or three weeks without change which, when necessary, is quickly made, the appartus being mounted on small wheels run on rails on a truck placed at a height corresponding to two short rails at the furnace. Among the advantages gained by the use of this matte separator, which is here in use in connection with the smelting of lead ores are that it reduces the slag losses, effects a saving in labor and material at the furnace by



BRITANNTA SMELTING CO'S SMELTER—VIEW OF WORKS FROM OSBORNE BAY.



TYEE COPPER CO'S SMELTING WORKS AT LADYSMITH, VANCOUVER ISLAND.

doing away with the customary periodic tapping of large quantities of matte at one time, admits of the advantageous automatic granulation of the slag, and, not being an integral part of the furnace may be removed or a change be effected in a few minutes. Mr. Harris has patented this invention and thus protected his rights therein.

During the year 1905 the tonnage of ore smelted at these works was 37,394 dry tons, the metal contents of which were as follows: Gold, 9,490 oz.; silver, 1, 234,292 oz.; copper, 154,943 lb.; lead, 17,471,440 lb. This showed a larger tonnage of ore treated and of metals produced, than in 1904.

The following is an excerpt from the annual report of the directors for the financial year ended June 30, 1905: "The company's furnaces have been kept fairly regularly in blast during the year, with results which, considering the keenness of the competition, the directors consider satisfactory, and an earnest of steady improvement in this branch of the business in the near future. The supply of lead ore, although at times during the year rather uncertain, is gradually becoming more assurred, and under the influence of better prices for metals a good many more mines have been able to resume work, with the result that we have made our purchases of lead ores from 125 mines, as against 102 last year. The question of adopting one of the several processes for an improved method of lead smelting has been receiving the careful consideration of the board. Much useful information bearing upon this subject has been collected by Mr. R. R. Hedley, the smelter manager, and as soon as possible an improved process will be installed in conjunction with our present plant, which it is calculated will sensibly enhance the company's profits.

CANADIAN METAL COMPANY, Ltd.

One of the most important enterprises affecting the material prosperity of the Kootenay districts of British Columbia established in 1905 is that of the Canadian Metal Co., Ltd., which has its head office in Nelson. It owes its existence to the persistence and energy of Mr. J. J. C. Fernau, its general manager, who for about two years has been assiduously working towards effecting the organization, and bringing about the operation , of this undertaking, which is comprehensive in its objects and gives abundant promise of proving of general benefit, particularly to the zinc and lead producing sections of south eastern British Columbia, and, incidentally, to that part of southwest Alberta, immediately beyond the confines of this provnce, in which it has been found advantageous, owing to the existence there of a supply of cheap fuel, to erect the zinc smelter, which was the initial undertaking of the company.

The company's staff includes the following: At Nelson: General manager, J. J. C. Fernau; secretary and accountant, E. Bernard; assistant to accountant, C. S. Rashdall; purchasing agent, (yet to be appointed); chief draughtsman, C. Fernau, Jr. At Frank: Works manager, Thos. Jones; assistant works manager, E. P. Liegart; office manager, C. E. G. Martin; chief chemist, P. Bernard. At Pilot Bay: Superintendent, Leslie Crauford; metallurgist, Jas. A. MacFarlane. Geo. Fernau is in charge of the company's Blue Bell and Ainsworth mines, and W. A. Turner, of the Emily Edith mine, Silverton, which the company is also operating.

THE ZINC SMELTER AT FRANK.

The company's zinc smelter, at Frank, consists of all buildings, machinery, plant and accessories requisite for the manufacure of zinc. The accompanying illustration will serve to give an idea of the works, although one view is not enough alone to convey an adequate impression of their extent and importance. They were visited, just before completion of the part now ready for the uses for which the smelter was designed, by Messrs. W. R. Ingalls and P. Argall, members of the Zinc Commission appointed by the government of Canada to report upon the zinc resurces and conditions of British Columbia. Shortly afterwards an experimental run was made, chiefly for the benefit of two visiting large stockholders in the company when a car of zinc concentrates the first received from the Grey Copper mine, near Sandon, Slocan, shipped by J. A. Whittier, manager of the Good enough Mines., Ltd., was smelted and the the first zinc made in Canada was produced.

The sampling department is equipped with automatic samplers and crushing machinery. The ore, after having been passed through the samplers, is conveyed to the storage bins, from which it, is weighed out to the roasting furnaces. There are four Merton's patent furnaces each having five decks; combined they give a hearth area of about 5000 sq. ft. The whole operation is automatic, the ore being fed to the furnaces by automatic feeders and taken thence to the adjacent mixing room by a screw conveyor.

In the mixing room there are bins for roasted ore; coal and coke crushers; mixers, of the pug-mill type; and elevators, to dump the ore into cars for conveyance to the distillation furnaces. These furnaces are in an adjoining room, which contains five block of furnaces comprising in all 1240 retorts.

The roasted ore is mixed in the mixing room with about 40 per cent of its own weight of coal and coke dust, and is then introduced into the retorts by skilled workmen, who throw it into the retorts with small scoops, this part of the treatment process requiring care and practice, to secure best results. The retorts are heated by means of producer gas, and the air for combustion is preheated by the waste gases of combustion in apparatus known as regenerators, which are similar to those used in steel furnaces.

The application of heat to the mixture of roasted zinc ore and coal and coke dust liberates the zinc, which is very volatile; it is distilled out of the retort and is caught in a condenser. From the condenser it is scraped into ladles. Afterwards it is cast into ingots and the zinc, if the product of ore of sufficiently good quality, is then ready for market. If much lead or other metal be present with the zinc in the ingots the metal has to be refined.

Roasting, mixing, and distillation, are the three essential processes of zinc smelting. In connection with these processes a pottery is necessary, also a gas producer plant. Other requisites are a forge, carpenter shop, stores, brick-making plant, etc. All of these have been provided at the Canadian Metal Co.'s works, and are in operation. The pottery may be mentioned as being one of the best of its kind, and the machines for making the pots used in the zinc works are of a style being rapidly adopted in the United States, although two or three years ago there were in that country only two plants equipped with this class of machine, the main principle of which is the use of hydraulic pressure of 3000 lb. to the square inch, whereas the method commonly adopted, even today, is the use of an auger machine which simply drills out the superfluous clay and makes pots thicker and less dense than those made by the hydraulic pressure method. The pottery is also supplied with machines for mixing, screening, and stamping the clay before it is moulded.

An elevator delivers the clay required fro bricks to the brick-making department, which is necessary owing to the large number and variety of differently shaped bricks needed in the construction of the furnaces. Adjacent to the pottery are two large brick kilns for burning the bricks at a temperature of 2,500 degrees Fahrenheit.

In a separate building is placed the gas producer plant. Here coal is burned by a mixture of air and steam, giving off what is called producer gas. The coal for these gas producers or geneators is obtained from the company's own colliery, situated close at hand and the entry to which is from works.

Coal is brought direct from the mine to the top floor of the gas producer building thus avoiding any intermediate handling between mine and zinc works.

The dimensions of the main building, which contains the roasters, mixing chamber, and distillation furnaces, are: Length 750 ft., width 50 ft., height to eaves 26 ft. The buildings in which are housed the forge, carpenter shop and stores, are similar in general design to the main buildings. All are of brick, roofed with galvanized iron. An enlargement of works as originally planned is being made and when the whole shall have been completed some 2,000,000 ordinary red bricks and 500,000 fire bricks will have been used in construction. The greater number of the bricks, including all those specially shaped, were made at Frank; most of the remainder were brought from St. Louis.

To supply power to the works there are five 60 h.p. steam boilers. Steam is supplied to five separate engines; it is conveyed to the different departments in well covered pipes. Water and electric light are obtained from the respective water and light systems provided by private enterprise for the town of Frank. Transportation facilities are convenient, the Crow's Nest branch of the Canadian Pacific railway passing close by the works, and connection with it is by two sidings, one running through the centre of the works and the other at the back.

The treatment capacity of the plant, when completed, will be about 125 tons of zinc ore per day. A commencement will be made in January with half that capacity, and within six months the full capacity will have been provided for.

The ore supply will be obtained entirely from British Columbia, or practically so at least for some time to come, and no doubt is entertained that an ample supply will be available. As most zinc ores of the province contain silver to a greater or less extent the ashes from the distillation furnaces will be saved and a second process in all respects similar to that used at the Trail and Nelson smelters for the treatment of dry ores will be adopted at Frank, and for this purpose a lead stack is being erected. Coke, from the Belgium ovens at the West Canadian Collieries Co.'s Lille colliery, situated about five miles away, will be used in this furnace. The only special feature in connection with this stack will be the large amount of room allotted for settling the fumes, which will be equivalent to a length of flue of one mile and a half. The noxious gases from the lead stack and from the roasting process will be carried away to the top of a neighboring hill by a flue and smoke stack rising to a height of 300 feet. It is thought that with the fumes liberated at that height no inconvenience or unpleasantness from them will result to residents in or about Frank.

THE SMELTER AT PILOT BAY

The industry that the company is establishing at Pilot Bay is one that will be of almost, if not quite, as much importance to the Slocan and other districts chiefly concerned, as that of zinc smelting at Frank, for it will provide a local market for mixed ores, many of them of such nature as to make them under conditions that have heretofore obtained, quite unsaleable. The plant here includes a concentrator which when the smelter was operated in 1895-7 concentrated about 200 ton of ore per day. This plant is being thoroughly repaired and renovated, and in addition 12 magnetic separators are being installed. These separators are designed to extract the iron and dress the zinc content of the ore up to a percentage sufficiently high for the purposes of the zinc smelter.

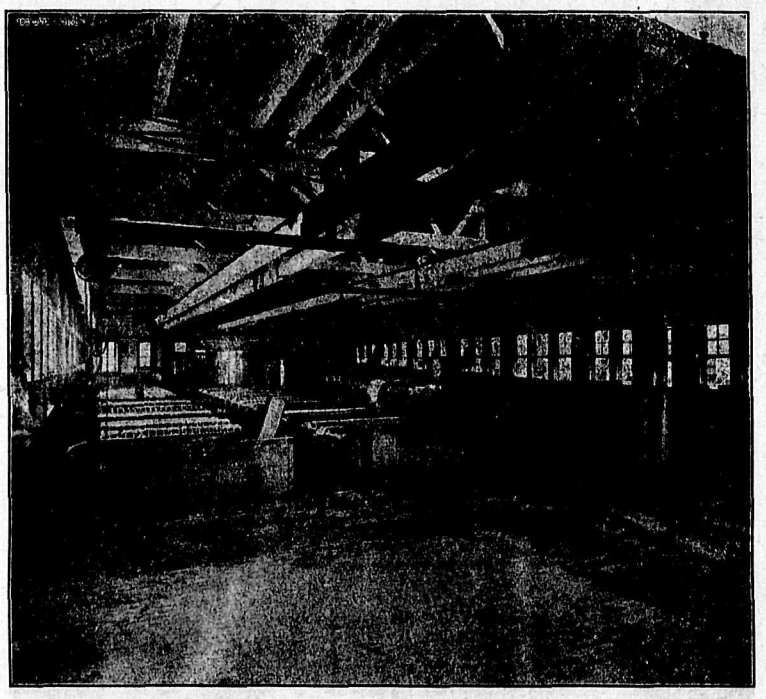
The company's lead smelting operations will be carried on at the Pilot Bay works. A supply of lead ores that will be obtained partly from the concentrator and partly by the purchase of such ores. There is already one lead stack available for lead smelting whenever it shall be found advisable to commence operations in this connection. This is a 42x96 in. stack, with six 3½ in. tuyeres on each side. The hand roasters formerly in use here will be replaced by mechanical roasters.

Steam will be the motive power at these works, the machinery installed including a 150 h.p. Corliss engine, and separate engines for driving the furnace blowers and electric light plant.

Slips are being constructed at the lake side to facilitate the delivery of ore and other materials. It is hoped the supply of ore will soon be large enough to warrant the addition of more lead stacks, for the erection of two or three more of which provi ion has been made in the existing smelter buildings. It is intended to enlarge the plant in all departments whenever the quantity of ore received shall justify this being done. It is expected that such enlargement will be required specially in connection with the treatment of dry ores. Future developments will be in the direction of making provision for the treatment of ores at the lowest possible cost.

The combination of plants possessed by the Canadian Metal Co., which has purchased outright the Pilot Bay works and the Blue Bell mine so long associated with them, will give it exceptional advantages in the purchase of ores, since it will be able to deal with those of even low as well as ordinary grade, and to utilize them in a manner and to an extent that cannot but be of mutual advantage to both buyer and seller. The main advantage to many mine owners will be that even the low-grade zinc ores will be saleable. The company's zinc-smelting plant being a thoroughly modern and complete one, together with the advantages of the company owning its own coal mine and the assurance of a supply of ore being regularly maintained, ensure a combination that will admit of low cost of treatment and a consequent ability to pay the highest prices for ores. The company's enterprise is intended to be mainly the establishment of works for the treatment of custom ores. The object the company has in purchasing and operating mines is to steady the supply of ore. It has already commenced to buy custom ores—in fact has been doing so for two or three months, and its intention is to endeavor to buy all suitable ores obtainable.

CANADIAN SMELTING WORKS, TRAIL. SLIME PLANT AND SILVER-GOLD REFINERY.



CANADIAN SMELTING WORKS, TRAIL—TANK ROOM, SHOWING ELECTROLYTIC DEPOSITING TANKS

CANADIAN SMELTING WORKS, TRAIL. INTERIOR OF MELTING ROOM

SULLIVAN SMELTER (MARYSVILLE)

The company owning the lead smelter at Marysville, East Kootenay, has been found non-communicative relative to its works and matters connected therewith. The following brief particulars will, however, show in a general way the nature of the plant that has been installed at Marysville and the method of operating it.

At these works there is a conveniently arranged crushing plant and sampling mill. The crusher and three sets of rolls are connected with a conveying belt, which passes the crushed ore and limestone to storage bins. These materials are taken out of the bins, weighed up, and dumped on a belt which elevates them over the top of two circular mechanical roasters with revolving beds, the ploughs being stationary, each roaster having a capacity of 50 tons per day. The product from these is elevated in cars and dumped into bins above the Huntington-Heberlein converting pots of which there are 10, each 9 ft. in diameter, and subjected to an air blast entering the bottom of each converter. At the end of 10 to 12 hours the almost total elimination of sulphur has been effected, and the pots or converters are inverted by mechanical means, and the contents shot out in a porous, cinder-like mass, which, falling a distance of about 12 ft. on a conical iron block on the floor below breaks up. After having been further reduced by hand breaking with hammers to a size suitable for the blast furnace, this converted product is shovelled into cars and elevated by means of a chain car-push to the blast furnace feed floor. There are two blast furnaces, 7x14 ft. outside dimensions and 40x138 in. inside of jackets at the bosh. Each has a capacity of about 150 tons per diem, but only one is operated at a time. The converter product being simply slag and lead bullion, the burning out of the sulphur by this Huntington-Heberlein process being practically complete, no matte is produced from the blast furnaces. It is stated that the ore from the Sullivan Group mines, which supply this smelter, would be an extremely difficult one to treat by ordinary blast methods and that, consequently, there would probably be little or no margin of profit left if it were so treated.

The sampling plant and building first put in have been completely remodelled, also the ore bins. The calciner shed is a building 72 ft wide by 240 ft. long with 18 ft. posts, covered with corrugated iron. The calciners have a 60 ft. bed, and are connected with a common flue, run underground to an iron stack 8 ft. in diameter and 150 ft. high, set on a concrete base 12 ft. above the ground. The dust chamber flues from the blast furnaces also connect with this stack, by an opening on the opposite side of the base. These dust-collecting flues are novel in construction and form, consisting of two walls of concrete 24 in. thick by 5 ft. high, placed 11 ft. 6 in. apart. Springing from these walls is an arch in the form of a catenary curve with a rise of 8 ft., built of 8 in. red brick laid in mortar. The arch is built in sections of 18 ft., with a space of 4 in. between each to allow for expansion, this space being covered by an extra ring of red brick, laid on top, and overlapping the ends of the sections of the arch.

Power for the works is derived from three Pelton wheels, placed below the smelter. The water is brought from Mark creek in a 4x4 ft. 6 in. flume, and gives a head of about 175 ft. From the wheels power is transmitted to the smelter by three direct steel rope-drives.

CANADIAN SMELTING WORKS

At Trail perhaps more than at most points in the province, there are unmistakable evidences of the confidence felt by leading smelter managers ter managers in the future of the in the future of the smelting industry in the province. Here there appear to be improvements either completed lately or in progress throughout the works. A new railway track scale has been put in; a 100-ton Fairbanks scale, and, notwithstanding its large size, so adjusted as to weigh within 15 pounds.

A large trestle, 28 feet high and 600 feet long, is nearing completion. This is for the storage of coke and limestone, which will be discharged as required from the yard under the trestle directly into trains of cars running in a tunnel underneath and hauled by electric locomotives. There are in use here three Westinghouse electric locomotives and one Jeffrey. Each weighs about three tons and is equal to 700 lb. draw bar pull.

In the blast furnace department a fourth copper furnace, the same size as those previously put in, viz., 42x180 in., has been installed. A much larger furnace is being made for the works, its size being 42 in. by 22½ ft. The castings for this furnace which will be erected in about three months, are being made by the Kootenay Engineering Works, Nelson. There are now only two lead furnaces standing, leaving two in reserve, not erected.

A large Roots high-pressure blower is being put in. This has a capacity of 130 cu. ft. per minute, an dthough it will ordinarily be run at a pressure of 40 oz., is capable of standing up to 48 oz. It will be belt-driven from a 200-kw. induction motor, which is also being installed. The impellers of this blower, are shorter than those of smaller blowers, but their diameter is greater. The gears are extra large and the shaft is also of a much bigger size than usual, thus avoiding "springing" when operating at high pressure.

In the lead smelting department the Huntington-Heberlein process is being installed, this process being considered most suitable for the great variety of ores usually handled here. It is hoped that this addition to the plant will be ready for operation by the end of January.

The plant in the lead refinery has been increased from 20 tons to 50 tons capacity, and materials are being received for adding 10 tons more. In the tank room the number of electrolytic tanks is being increased to 220, and the first and second lots of tanks put in are being replaced by others of improved construction. The tank room building is to be lengthened 40 ft. Travelling electric hoists, run on I beams, are to be used in the enlarged tank room in place of chains and blocks as at present employed. The melting plant has been added to, a 50 ton kettle having been installed for melting pig lead. The two 30-ton kettles that were put in some time since are now both used for melting bullion and making anodes. As the extension of the plant will require that a larger electric generator be put in, the management propose to install a 400-kw. machine.

As the lead received here contains considerable antimony, experiments have been carried on in connection with the electrolytic deposition of this mineral, which heretofore has been thrown away. These have been on a scale sufficiently large to demonstrate the success of the process, and it is probable that arrangements will be made to enlarge the operations to a degree that will provide for the saving of the antimony on a commercial scale.

Another advance is being made, in this instance towards the manufacture of hydro-fluosilicic acid, the requisite supply of which has hitherto been obtained from Pittsburg, Pennsylvania. The plant for this purpose is being put in and it is expected it will be in operation a few weeks hence.

Still another improvement has been effected—a machine has been devised for the purpose of making cathodes or starting sheets used in connection with the electrolytic depositing of the lead. Formerly these sheets were obtained by the deposition of the lead on iron plates or sheets; now they can be made very rapidly and cleanly by the machine. The apparatus is the invention of the superintendent of the refinery, Mr. John F. Miller, who has applied for patents for it.

Water supply has been receiving attention, in which connection a new system has been put in. Seven miles of 18 in. and one mile of 6 in. wood stave pipe have been laid. Stoney, Murphy, Rock and Trail creeks are now levied upon to contribute to the water supply for the works, and the quantity available is now ample for all ordinary requirements. A second fire pump has been obtained, this one being placed near the lead refinery. It is a Worthington centrifugal pump, with a capacity of 700 gallons per minute.

Each year sees the Candian Smelting Works more self-contained than its immediate predecessor. There is still another necessary addition to be made, though, viz., the putting in of copper converters. This will, no doubt, be done when the available supply of copper ore shall be regular and large enough to justify the expenditure that would be involved. Meanwhile the copper matte from these works is sent to Tacoma, Washington, for converting.

The size and growing importance of the Canadian Smelting Works can hardly be realized, except by occasional visits to the works and the obtainment of information relative to their operations and products. Some idea of their production of metals will be conveyed by the following figures for the year just closed. The total tonnage of ore received was 227,000 tons, 192,000 of which was from Rossland, (while from other sections the receipts were about 20,000 tons of copper ores and 15,000 tons of lead and dry ores. From these ores there were produced 82,000 ozs. gold, 1,360,000 oz. silver, 13,280,000 lb. lead, and 4,529,000 lb. copper. Part of the metals was refined at the company's refinery at Trail, together with bullion from the Hall Mining & Smelting Co.'s smelter, at Nelson. The refined product consisted of 9,200 oz. gold, 1,088,000 oz. silver, and 16,393,000 lb. lead.

It is known in a general way that the Trail product of refined gold is sold in the United States, refined silver and lead are shipped to China and Japan, pig lead is sent to the lately established lead corroding works in Montreal, metallic copper finds a market in the United States, sulphate of copper or bluestone is all sent to the Northwest Territories or Manitoba, where it is used for pickling seed wheat; and sheet lead, lead pipe, and other manufactured lead products are sold in different parts of Canada, wherever opportunity for business offers.

LE ROI SMELTER (NORTHPORT)

Although the Le Roi Mining Co.'s smelting works are situated a few miles south of the International boundary line, they are for all practical purposes British Columbian works, the great bulk of the ore treated at them having been received from Rossland mines. They were closed down a short time ago, on the conclusion of the contract, already mentioned, for the reduction of Le Roi ore at the Trail smelter. It has been claimed that economies have been effected and smelting practice so much improved under the management of Mr. A. I. Goodell, who has been in charge for more than a year, that latterly profits were made to an extent not previously reached in connection with the smelting of Le Roi ores for several years. However, the change has been made to Trail and the Canadian Smelting Works are now treating the output of the Le Roi mines. A recent change in the company directorate, whereby A. J. McMillan formerly managing director, and his friends have regained control, may result in a change of policy that will lead to the early resumption of operations at the smelter

B. C. COPPER CO'S SMELTER

Owing to the absence in New York of the manager of the B. C. Copper Co.'s smelter no particulars of the year's operations and improvements at the Greenwood works have been obtained. The works were operated steadily throughout the year and smelted about 180,000 tons of ore from the company's Mother Lode mine, and some 25,000 tons from other mines. The principal addition to the smelter in 1905 was a briquetting plant, which was put in operation last May, since when a portion of the large dump of flue dust, which had been accumulating ever since the smelting of ore was commenced here, which was in February, 1901.

The company has made public its intention to enlarge its smelter to an extent that practically means reconstruction and re-equipment along the latest and most approved lines. The new plant is to include three blast furnaces of a size and capacity—approximately, 600 tons per diem each— larger than any of the copper furnaces now in Canada. The hearth area of each furnace is given as 48x120 in. Furnace charging will be from side-dumping cars hauled by trolley locomotives. Molten slag will be hauled to the dump in 25-ton cars by electric motors. The slag cars will each have an electric motor for tilting the car. There will be three large Roots' blowers, each driven by a 300 h.p. induction motor. A 100-kw. motor generator and several smaller motors will also be installed. Five trolley locomotives will be used for hauling ore to the furnaces and slag to the dump. Ore bins are to be enlarged, coke bins constructed, railway trestles raised, a larger railway scale put in, a machine shop with full equipment of power tools provided, together with all accessories requisite to make the smelting plant modern and complete. The new furnace building will be of steel and generally buildings and plant will be such as to make the works second to none in regard to completeness of equipment and in provision for economy in operation.

The changes have been designed by, and are to be made under the direction of the manager, Mr. J. E. McAllister, who before taking charge of these works had the benefit of a valuable experience, in the capacity of assistant superintendent, at the Tennessee Copper Co.'s large and modern smelting works, in Tennessee.

GRANBY CO'S SMELTER

At the Granby Consolidated Mining Smelting & Power Co.'s big smelting works, at Grand Forks, Boundary district, numerous improvements and additions were made in 1905. Some of these were rendered necessary by the construction of a second railway spur to the works, the Great Northern railway company, on the completion of its branch line to Phoenix, where are situated the mines of the Granby Co., having made the connection, so as to enable their trains to deliver ore to the smelter.

The additions made to the receiving bins last year increased the total ore storage capacity at the smelter to about 15,000 tons. The bins into which the Great Northern trains deliver ore are parallel with and within 20 or 30 feet of those into which the Canadian Pacific ore cars dump their contents. The Great Northern bins extend along a distance of about 1000 ft.; the C. P. R. bins cover a shorter length. The upper part of the space between the rows of bins is floored, which convenient arrangement provides a long flat bin for coke, 3000 tons of which can be stored in it.

Now that all the ore produced by the company's mines is crushed at Phoenix, there is comparatively little work for the crushers in the smelter sampling mill to do. Of course all custom ore is passed through the sampler, but only one car in eight of Granby ore is sampled.

The electrically operated mechanical furnace charging system devised by the general superintendent of the Granby Co., Mr. A. W. B. Hodges, was put into full operation at the company's smelter early last year. In this, side discharge cars are used and they are run into the furnaces, two at a time. Each car has four compartments so arranged that the charge can be placed in any part of the furnace desired, thus securing the distribution of the charge wherever needed. These cars are moved along tram tracks between ore bins and coke bins and furnaces by electric locomotives, and this charging system is operated so economically that a saving at the rate of $80,000 to $90,000 per annum, with six furnaces running, was effected, this having been the difference between the cost of hand feeding and this system of mechanical feeding. This was the estimated saving before the two large furnaces were blown in —now the saving is considerably larger than with only six furnaces running. Five 20 h.p. Westinghouse electric locomotives are used, three of them doing the work of charging the six smaller furnaces. Sometimes the two big furnaces run so fast that there has to be available a separate locomotive for each of them. The small furnaces smelt on an average about 300 tons each per diem, and the big ones about 500 tons. Occasionally the daily run is higher, but not as a rule. The 20 h.p. locomotives will haul 4 tons to a car. Two short cars are used instead of one long one for convenience in going round curves to and from the ore bins.

The number of slag pots or cars, for dumping the slag hot, has been increased by 12, making 40 in all. As these pots cost about $600 each it will be seen that even this part of the smelter equipment is costly in the aggregate.

An addition to the blowers is a big Connersville blower, one of the largest made and known as the "Jumbo" size. It is claimed that it is the largest blower in Canada, and that outside of seven at Anaconda, Montana, there are none so large in use in the United States. Its capacity is 30,000 cu. ft. of air per minute and it has a double drive, being operated by two 150 h.p. induction motors.

A new flue chamber, of brick, has been built. It is 800 ft. long, 11 ft. wide and 10 ft. high. It connects with a circular brick smoke stack 150 ft. high and 13 ft. inside diameter. This stack stands on a base composed of first 30 ft. square of solid concrete 4 ft. thick; then of 10 ft. of solid masonry, which brings the foundation to surface level. Above this the stack is 20 ft square up to where the circular construction commenced.

In connection with the converting plant, there has been added a duplex blowing engine, capacity 6000 cu. ft. of air per minute, driven by a 300 h.p. induction motor. Added to the capacity of the old engine, a total of nearly 10,000 cu. ft. of air per minute is obtained, which is sufficient to run three converters continuously. A third converter has been ordered; this will be of similar size to those now in use, and should be received in about three months. Another recent addition is an up-to-date converter lining mixer. A new crusher and rolls, to break up the ore for making converter linings, are being installed.

Other improvements effected include the extension of the briquetter house, which is now so arranged that the briquettes are dried for 48 hours instead of for only 24 hours, as formerly; the machine shop has been extended; a big warehouse for bar and sheet iron, new blacksmith shop and a round house for the three steam locomotives that draw the slag pots to the dump, have been built; the power tool equipment of the machine shop has been added to the new tools including lathe, punch, shears, 2200-lb. steam hammer, etc. Another pump has been put in—a Byron-Jackson centrifugal pump, equal to 650 gal. per minute. The tools and buildings enumerated in this paragraph cost about $25,000.

About 1500 horse power in all is required to run the plant, which, roughly, is about equal to one-half horse power for each ton of ore smelted, the calculation including the power required for the conveying plant. In a general way the proportionate power requirement at the company's mines is similar.

The West Kootenay Power & Light Co. is about to connect its new electric transmission line with the smelter, so that hereafter there should not be any stoppages through lack of power.

The tonnage of ore smelted here during the year was about 683,000 tons, the approximate value of which was between $3,500,000 and $4,000,000.

DOMINION COPPER CO'S SMELTER

The Dominion Copper Co.'s smelter was idle the greater part of the year. It was operated by the Montreal & Boston Consolidated Mining & Smelting Co. until May 20, when it was shut down and remained idle until, at the end of November one furnace was blown in, the Dominion Copper Co. having meanwhile acquired possession of the works. Altogether between 150,000 and 200,000 tons of ore were smelted here during 1905.

No additions of importance were made to the plant, but should the Dominion Copper Co. decide to keep it running for any great length of time, additions and improvements will, no doubt be made to the full extent required.

VANCOUVER ISLAND SMELTERS

Space restrictions compel the reference to the two smelters situated on Vancouver island to be very brief. The Tyee Copper company's smelter at Ladysmith, was operated during a part of each month during the year. Mention has already been made of its leading features. Though small the works are well designed and built, consequently smelting has been done at them at a relatively low cost. The insufficiency of ore on the coast is a serious drawback to be contended against, but should the available supply increase to an extent that would permit of this smelter being run continuously, its enlargement would, no doubt, be undertaken.

The Crofton works will probably be again at work within a couple of weeks after a somewhat long shut down. Their prospects for a supply of ore are better than in the case of the Tyee company's works, since the ore of the Britannia mines is to be smelted here. Additions and alterations that have been in progress for the past two months are about completed, and preparations for blowing in will shortly be in hand. It is understood that a similar hot blast system to that working so successfully and advantageously at Ladysmith is to be put in at Crofton. The operations of the Britannia Smelting company will be of much interest, for the reason that a larger proportion of concentrates will have to be smelted at these works than usual. Between the large supply of concentrates and the ore fines, there will be much material for making into bricks, part of which will be roasted and part smelted raw. It was Mr. Kiddie's experience to establish a new smelting practice in dealing with the ores of the Tyee mine; now he has to do pioneer work again in connection with the concentrates from the Britannia mine. As he does not know how to spell "failure" it may be expected that ere long announcement will be made authoritatively that he has overcome all preliminary difficulties and is recovering all the values in the Britannia product that can be recovered by blast smelting.

BIRTHS, DEATHS AND MARRIAGES

The records of births, deaths and marriages certified in the registrar's office during 1905 show a decided gain, births and marriages being more and deaths less numerous.

The record of 1904 was: Births 84; deaths 104; marriages, 82.

For 1905—Births, 100; deaths, 90; marriages, 83.

Deaths and marriages are recorded, but only a small proportion of the births; a registration of 100 probably indicates a total of about 350 or nearly one a day for the year.

YEAR'S MINING RECORDS

The statistics of 1904 showed: Locations, 311; placer locations, 20; assessment certificates, 620; transfers, 190.

For 1905—Locations, 264; placer locations, 9; assessment certificates, 495; transfers, 159. There were 656 free miners' certificates issued during the year.

RAIL AND LAKE TRAFFIC

C. P. R. OFFICIALS TELL OF GOOD YEAR'S BUSINESS

NELSON'S IMPORTANCE AS A DISTRIBUTING POINT

As a divisional point in the great Canadian Pacific railway system, a northern terminus of a branch line of the Great Northern railway, and as the port of the lake steamers owned by both railway companies, and as the commercial distributing point of eastern British Columbia, Nelson is deeply interested in the transportation question. The railway headquarters for what is known as the Kootenay division are in this city, embracing all lines south of Arrowhead to Kootenay Landing in the east, and Midway in the west and including the C.P.R. lake and river steamers. The branch lines include the Nakusp & Slocan railway, the Rossland branch, the Columbia & Kootenay, Columbia & Western, the Slocan and the Lardeau branches. The headquarters' staff is presided over by superintendent J. S. Lawrence, while captain Gore of this city, is the superintendent of the B. C. lake and river service; H. E. Macdonell is general freight agent, and J. S. Carter district passenger agent.

The passenger service in and out of Nelson has exceeded that of the previous 12 months and the same can be said of the freight business, taking the district of Kootenay as a whole. As the previous year was the best up to that time it will be seen that the local business situation for the C.P.R. is a satisfactory one. The railway lost some business in the Boundary district probably, which has been taken by its rival, the Great Northern, but on the other hand a distinct gain has been made at Rossland and there has been a general increase throughout the whole district.

The business outlook for 1906 is satisfactory, with every prospect of a steady increase during the ensuing 12 months.

STACK OF SILVER-LEAD BULLION. HALL MINING AND SMELTING CO.'S SMELTER, NELSON

All the smelters in the district are working, new plants for treating ore have been completed and some of the older plants have had their capacity increased, all of which points to an increased output of the mines, and in turn a greater tonnage for the railways. More ore than ever will be hauled to the smelters as well as more coal, coke, lime and supplies. This means, of course, that more men will be employed and more money distributed by the company. Of all the interior towns Nelson benefits more from railroad prosperity than any other. On the best authority it can be stated that the coming year is confidently expected to be the best ever experienced by the C. P. R. in the Kootenay district.

Superintendent Lawrence, in reviewing the past year said: "In the Kootenay district last year the Canadian Pacific railway expended upwards of $350,000 for permanent improvements, over and above the ordinary operating expenses, and of this amount a very large proportion was spent in the territory immediately tributary to Nelson. At our railway repair shops here, which have now been established for a little over two years, an average of about 40 men find steady employment; the staff now is about the same as last year. All locomotives and cars are repaired here. We did not make any additions to the plant during the year and as to future improvements and additions, I cannot speak positively until about February, when our estimates for the year will be approved at headquarters. The payroll for the district will average about $50,000 per month during the summer and $40,000 during the winter seasons; about two-thirds of this can fairly be said to be distributed in Nelson.

"Business for last year? Well, taking the district as a whole, it shows an increase over 1904, and I look for a marked increase this coming year. The smelters in the district are all working with increased capacity and this year we shall have new plants to haul for, including the one at Pilot Bay, which has remained closed down for so long. The new plants at Rosebery, Kaslo and Frank. I look for a good increase in the tonnage from the mines and in smelter supplies and with just an average increase in general business, we should experience the best year in the history of the district, and I am confident that we shall. I cannot speak at this time about our plans for the new year for extensions, improvements or additions, that will have to come later in the year."

Captain Gore said: "We hope to have our new passenger steamer, now building at our shipyards here, completed by May 1. She will cost about $60,000, without the furnishings and fittings. Some 65 or 70 men are employed at the shipyard, with a payroll of about $1000 per month. When we are not building a new vessel we still have a force at the yards of about 20 men for repair purposes. When a steamer like the Moyie has to be overhauled, it costs about $300 to take her out of the water and put her back again. We think of calling the new steamer the Kuskonook. She will be 192 feet long, with a 30 foot beam and should be able to travel 18 miles an hour, and will have a double berth deck, giving sleeping accommodation for 65 or 70 persons. She will ply between Nelson and Kootenay Landing and will cut down the present time taken by an hour at least. We have improved the shipyard facilities during the past year and added a boiler house and boiler, band saw plant and dynamo plant. In Kootenay district we now have a fleet of 15 steamers and tugs and 25 barges. It takes a staff of 30 to man a steamer and 9 for a tug. The fleet is made up of the Kokanee, Nelson and Moyie, passenger steamers and the tugs Ymir and Valhalla on Kootenay lake; the S.S. Procter and tug Victoria on Trout lake; the Slocan and Sandon on Slocan lake; the Columbia, Rossland, Kootenay and Minto on Columbia river, and the York and Aberdeen on Okanagan lake. Outside of the new steamer now building we don't contemplate any additions or improvements to our service at the present time."

H. E. Macdonell, general freight agent, Kootenay district: "I am sorry that I am unable to give you details for the past year in my department, the figures will not be made up for about three weeks yet. The total business done for the district during the past year has been good and shows an increase over the previous year. Merchandise haulage has increased and this is especially the case in Nelson where the monthly returns throughout the year have shown a steady increase, each succeeding month, the total being well over the year previous. The coming year should, in my opinion, show a more marked increase. I think the Kootenay district is decidedly on the up grade. The production of zinc on a commercial scale is one of the principal factors. There has been, too, a revival in silver-lead mining and a big increase in the lumebr trade, with every promise that general business will grow rapidly during 1906 in the district, and, particularly in Nelson, where the effect of the improved conditions will be first felt."

J. S. Carter, district passenger agent: "Business for the past year has been decidedly good and shows an increase over the previous year's figures, which were good in themselves and the best up to that time. One of the passenger traffic features of the year, from a purely local standpoint was the Nelson fair, which attracted more outsiders here at any one time than ever before. Summer excursion travel to the east was lighter than usual owing to the atractions of the Portland fair and he fact that many peopel hereabouts desired to visit Victoria, Vancouver and the coast for the first time. Complete figures for the past year will not be available for two weeks. No special features for the new year have yet been announced but I look for an increased share in the general prosperity everywhere evident in the district and country."

A. L. Ruff, Great Northern railway general agent: "I am only relieving Mr. Tackabury, who is at present in California on leave of absence. Our freight and passenger business for the past year has been decidedly satisfactory. The passenger traffic especially shows a gratifying increase since we have established a through buffet service from Nelson to Spokane. From all the evidences coming in to us here, we anticipate a prosperous new year and increased business."

INTERIOR OF HALL M. AND S. CO.'S SMELTER, NELSON, SHOWING LEAD SMELTING FURNACE

CUSTOMS AND INLAND REVENUE

Large Increase in Former—Slight Decline in Latter Collections

The customs receipts at the port of Nelson for 1905 show an increase over those of 190 of nearly $40,000 or about 20 per cent.

The total duties collected in 1904 were $157,532.57, a monthly average of about $13,200.

The receipts for 1905 by months were as follows.

January	$ 11,615.15
February	12,759.13
March	15,166.93
April	15,082.85
May	15,050.29
June	14,246.75
July	24,951.45
August	21,297.73
September	21,522.18
October	13,893.27
November	13,822.65
December	17,169.41
Total	$196,657.41

The increast is $39,124.84, which is equal to 24.8 per cent, a remarkable gain for a single year.

The inland revenue collections show a slight decrease from the figures of 1904, but so slight that it is easily explained by a few entries carried into last year's accounts from the year before. The figures for 1904 were:

Spirits	$27,612.27
Malt	3,288.53
Raw leaf tobacco	636.40
Cigars	2,251.65
Licenses	390.00
Total	$34,178.85

For 1905 the figures are:

Spirits	$26,812.45
Malt	3,048.28
Raw leaf tobacco	746.90
Cigars	2,470.55
Licenses	340.00
Total	$33,418.18

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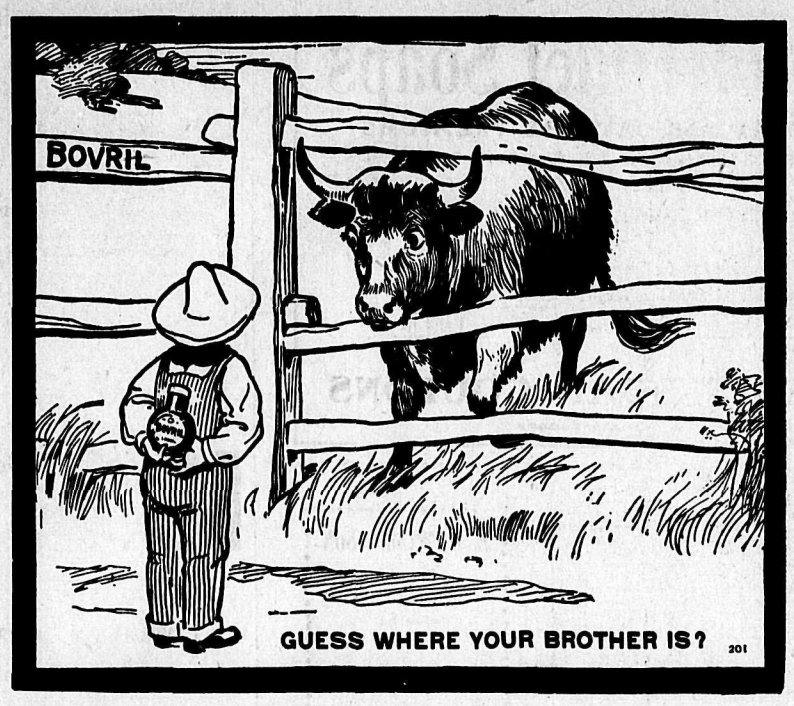

NELSON BANK MANAGERS

REPORT FAVORABLY UPON BUSINESS OF PAST YEAR

INDUSTRIAL CONDITIONS POINT TO PROSPEROUS YEAR

No class of business men in any community are in as close touch with every department of trade and industry, or in as favorable a position for forming a correct judgment of the economic conditions prevailing as the local bank managers. Every growth or decline in any department and every change of business sentiment, from depression to confidence, or vice versa, is early reflected in the business of the banks.

Interviewed during the closing week of 1904, the managers of the Nelson banks could only say that the city had successfully weathered a prolonged period of depression, and that there were some grounds for hopes for an improvement during 1905.

Those hopes are already in process of realization. Now at the end of 1905, the bank managers unanimously report a marked improvement and give substantial reasons for expecting a long continuance of more favorable conditions. They point to the present flourishing condition of the mining industry, to the reorganization of the lumbering industry on a more profitable basis, and to the remarkably rapid development of fruit farming. All these resources, in their opinion, are certain to be permanent causes of increased growth and prosperity to Kootenay and especially to Nelson.

L. B. de Veber of the Bank of Montreal—I cannot compare the year in Nelson with previous years. This is practically my first year here. During the first months of 1905 business was rather dull. Lately signs of improvement have been numerous and striking. All industries seem to be reviving and expanding. Mining especially is in a better condition than it has been for a long time. The prevailing high price for all metals is having a very stimulating effect. There is a marked change in the business atmosphere generally. Hope and confidence have returned. Collections during the year have been fairly good. The financial condition of the city merchants generally is, I should say, better than it was a year ago, and is still steadily improving.

J. L. Buchan, of the Bank of Commerce—I consider, on the whole, that the past year in this district has been marked by a very noticeable improvement in the lines of business in which we are most interested. The stimulus given to the silver-lead mining industry by the government bounty on lead is evidenced by an increase of more than 100 per cent in the amount of lead produced during the year ending June 30, last as compared with the previous year. The upward tendency of the price of metals during the last few months together with an increased demand for zinc, are factors which should tend to promote a very considerable increase in mining hereabouts in the near future. Already there is quite a noticeable activity in mining properties in the immediate vicinity of Nelson.

In regard to the lumber industry there is little progress to report during the year. Unsatisfactory prices, due principally to keen competition among producers, has kept down the profits. The demand in the territories has been good and now that the mountain lumbermen have got together in a determined effort to maintain prices, it is hoped that the coming season will prove more profitable to all concerned.

The growing of fruit in this vicinity has attracted considerable attention during the year, resulting in a keen demand for land suitable for this purpose, with an output, that from present indications should increase greatly from year to year. This industry should add greatly to the prosperity of this portion of the Kotenays.

The general trade of the city has shown considerable growth as evidenced by the customs returns and the greatly increased business done by the wholesalers here. The sale of $150,000 in city debentures at the price of $6.10 during the year goes to show greater confidence on the part of eastern investors in the future of this part of the country and of the city of Nelson in particular. Taking all things into consideration I should say that the present outlook is more hopeful than it has been for a number of years.

J. M. Lay, of the Imperial Bank—Conditions have considerably improved during the past year, and I consider that the coming year will show a marked improvement in all lines of business. Nelson is a distributing centre for a large district and as conditions in the district improve our merchants will be able to increase their sales largely. The outlook for mining with the present price of metals is a bright one, and this great industry will, I believe continue to go steadily ahead. What the industry has been suffering from more than anything else during the past five years has been a lack of confidence on the part of the investor. We have the mineral in the country; all we need is the capital properly applied and economic methods of treatment to make the Kootenays one of the richest portions of Canada.

The lumber industry is growing throughout the Kootenays and with the large influx of settlers into the Northwest, the demand for lumber this coming year will no doubt exceed that of other years.

Fruit farming on Kootenay lake and throughout the district is making great strides; it has been shown without a doubt that the first grades of fruit can be produced, so that this industry will continue to grow rapidly. Nelson is particularly well situated as the centre of the Kootenays. I would like to see the city advertise vigorously the advantages of the district this coming year, notwithstanding the fact that we have more than held our own during the past, there never was a time during the history of Nelson when it is more necessary than today to push vigorously ahead.

A. W. Hyndman, of the Royal Bank—Although my brief residence in Nelson does not permit me to speak as fully on the commercial and industrial situation as I would otherwise care to, I think that I am only voicing the sentiments of the business community, when I state that trade has improved in every department during the year, due in great part to the largely increased production and demand for the production of the mines, upon which as yet, the city is almost entirely dependent, though if the influx of such a desirable settlers should continue — and there is every reason to believe it shall—it appears to me that it will only be a few years before all the arable land of the Kootenays will be populated by a happy and contented class of farmers and fruit growers, who will at all times find a ready market for their produce in this city, and naturally Nelson will derive many benefits directly and indirectly from this source.

From a provincial standpoint, I consider that 1905 has been a record year in the history of British Columbia. Three new branches of this bank have been opened, making a total of 13 in this province and I do not know that I could point to any better indication of the faith our directors have in the future of the country. I would consider myself an out-and-out pessimist if I did not bespeak for Nelson in 1906, a year of even increased prosperity in all branches of industry, upon which the city is dependent.

INDUSTRIES OF NELSON

FOUNDRIES AND FACTORIES ALL REPORT PROSPEROUS YEAR

GENERAL EXPANSION LOOKED FOR IN THT NEW YEAR

This foundry on the water front at the foot of Park street, has now been in operation about two years with very satisfactory results. B. C. Travis, proprietor and general manager, stated that the turnover last year was between $40,000 and $50,000. Twelve men find steady employment and the monthly payroll is about $1000 or a little better. Associated with the works is the Crawford Aerial Tramway company, of which Mr. Travis is also general manager. Castings of all kinds, sheet metal work, the manufacture of mining cars and mining and sawmill machinery and the repairs for smelter plants, sawmills, etc.

"Last year was an excellent one in our business," said Mr. Travis. "As a matter of fact it has turned out away above what I figured it would this time 12 months ago. We have plenty of work ahead for the new year and I look for a prosperous and busy season. We are good customers for the transportation people. Machinery that formerly went east for repairs is sent here now and quickly put to rights and we keep all standard patterns in stock. The railways haul iron and coke to our doors and we have every facility here for handling our business promptly. We have customers all over the interior.

The Canadian Metal company's new smelter at Frank, Alberta, gave us a good order and the sawmills of East Kootenay have kept us busy throughout the year. The mines around Ymir, Erie and Salmo as well as those in Slocan and Lardeau have called for a good deal of general work and so have the sawmills at Trout Lake, Arrowhead, Revelstoke and Comaplix. The West Kootenay Power & Light company, the Canadian smelter at Trail, the Dominion Copper Company's smelter at Boundary Falls and the Yale-Columbia Lumber company are among our principal customers in the west. I do not like to go into details as some of our customers might not like it. Payments and collections have been prompt and satisfactory all the past year. If I specified any particular section I should think there has been a marked revival in mining around Ymir during the year, judging from the business we have done in that district. I am confident that the coming year will be an excellent one from our point of view."

NELSON IRON WORKS

This foundry is situated at the foot of Hall street, along side of the C.P.R. track, and J. A. Honeyman is proprietor and manager. "We moved in here from our old foundry at Bogustown a year and a half ago to get better facilities," said Mr. Honeyman, "and we have no reason to regret the change as our business this past year and particularly during the last three months, has increased wonderfully. It has been an excellent 12 months from a business standpoint, the best we ever had and all indications point to a still better and busier time in 1906. I don't care to mention our turnover for the year, but we find steady employment for from 8 to 14 men the year round and our monthly payroll will approximate $1200. We do general foundry work, make iron and brass castings of all kinds, dies and shoes and have the standard patterns in stock. We have two cupolas, a large and a small one, the latter specially for rush jobs, so that when a breakdown occurs at the mines, smelters, sawmills, or on the steamers, we can very quickly make repairs, and there is now none of the aggravating delays caused to users of machinery that used to happen in the early days here. We started the Bogustown foundry in 1897, but I like the new site very much better.

"Who are our customers? Oh, we get orders from literally all over southeastern British Columbia. Here in the city we do the Hall Mines smelter work and the work of the C.P.R. steamers. We go as far east as Moyie, where the St. Eugene mine is one of our best customers. There is nothing too light or too heavy for us to tackle. The sawmills all over this section of the province have provided us with plenty of work for machinery and repairs, and the local launches require a good deal of fixing up at times. The mines and sawmills in the Slocan and Lardeau send us business and we get a little from the Boundary country where, as you know, they now have a foundry of their own. We have had a good deal of work from the Ymir section and look for more this coming year. We have no trouble about collections, they come in promptly and regularly, and we have practically no bad debts as the result of our last year's work. As I have already stated the business outlook for the coming year is particularly good. We have more orders and work on hand than we can fill."

RIBLET TRAMWAY COMPANY

The factory of this company is in St. Louis, but the head office for British Columbia and the west is on Water street, Nelson, with W. S. Riblet, as local manager. The company has built and equipped many aerial tramways for the mines in southeastern British Columbia, but during the past 12 months the plants completed were one for the Britannia mine on Howe Sound, at an expediture of $75,000, and another for the Conrad Mines at Windy Arm, Yukon territory, costing $60,000. The manager states that the excellent class of development work done in the Kootenay mines during the past year undoubtedly means new tramway orders in the near future.

"Times have changed, and I think for the better," said Mr. Riblet. "Some years ago it was the fashion to rush in orders for a tramway after doing a little development work on the property and before it was really clear whether the situation justified the expense. Then, perhaps, want of necessary funds kept the mine idle, or in some cases failure to find a permanent body of ore caused a closing down, temporary or absolute. Now the mine owners go to work differently and I think more wisely. Ore is blocked out, machinery is installed and the way made clear for the installation of an aerial tramway, the tram becoming a necessity to cheapen the cost of production. A great deal of development has been done in Kootenay mines during 1905 and as a result I look for tramway orders this coming year."

The Riblet patent automatic aerial tramway now installed at the Britannia mine Howe Sound, connecting the mine with the concentrating works at Britannia Beach, was commenced in 1904 and completed last August at a cost of $75,000. It is in two sections, together 16,800 feet in length. The upper section is 5600 feet long and in that distance drops 1400 feet; while the lower section drops 1800 feet and is about 11,000 feet in length. The capacity is about 500 tons in 10 hours, and this can be increased to 100 tons an hour by putting on sufficient buckets. The tramway is equipped with all the latest improvements that experience has suggested to the builders and it has been found to work effectively and satisfactorily. The track, or carrying cable for supporting the loaded buckets is 1 3-8 inch, while the traction cable—that on the unloaded side—is 1 inch. There are from 50 to 100 buckets on each section, carrying about 1000 pounds each. It took just about a year to erect the plant.

The latest plant constructed by the Riblet company, connects the Montana group of the Conrad Consolidated Mines, with Conrad City on the shore of Windy Arm, Yukon territory, a distance of 3 3-4 miles. The cost of construction is put at $60,000 and while the plant is practically complete it is not yet in running order.

P. BURNS & COMPANY

"The situation in Kootenay is greatly improved since last year," said F. M. Black of the above company. "A few places show a falling off but the greater majority are decidedly better and no city in the whole district shows so great an improvement as Nelson. The Christmas trade in poultry is, I believe, a fair criterion of the prosperity of any community. I cannot give you complete figures of the extent of our business in that department for this year, but I may tell you that we have opened the fifth car of turkeys, a car containing 12,000 pounds. That means that over 50,000 pounds of turkey were sold in Nelson and the district during the Christmas week. What the total of turkeys, geese, ducks, chickens and fowl generally would be, I cannot say, but I think it is evident that no one is suffering much from hard times. The amount is certainly far in excess of last year's trade at this season.

"Throughout the year there has been a very marked improvement in the retail trade of Nelson, every month showed a gain from the corresponding month of 1904 and also over the preceding month of 1905.

NELSON BREWING CO.

The Nelson Brewing company's establishment is one of the largest and most widely known industrial institutions in the city. The number of men constantly employed is 10 in the brewery and two in the office, in addition to the general manager, W. E. Gosnell.

The present company is only a little over a year old. It was formed by the amalgamation of two other brewing companies, both of Nelson. The members include most of the hotel and saloon keepers of the city. The district supplied includes Nelson, the Ymir district, Rossland and Trail, the Boundary and Similkameen, Slocan, Lardeau and a part of East Kootenay. Within the last month arrangements have been made for a branch in the Similkameen district, with a plant at Princeton.

In addition to the plant for the manufacture of beer, which has a capacity, if needed, of 150 barrels a day, there is an ice making plant which is at present supplying the Yale-Kootenay Ice company, and a soda water factory. The average output of the brewery is about 75 barrels per day, varying with the seasons, and with the demand from the several districts served. The machinery of the brewery, soda water factory and icemaking department, is thoroughly modern and capable of meeting the requirements of many years' growth.

THORPE'S SODA WATER FACTORY

The Nelson branch of Thorpe's soda-water factory is a modest concern, employing only three men; W. R. McLean is the local manager. The business of the branch has shown a steady growth from year to year, with a greater gain for 1905 than for any former year. During the summer months a very extensive and profitable business is transacted with the surrounding districts. In the winter business contracts to the supply of the city.

Prospects for 1906 are excellent and the plant is equipped to meet the requirements

KOOTENAY WIRE WORKS

This business was started in Trail nine years ago. It was purchased by the present owners five years ago and removed to Nelson, being located on the corner of Front and Hendryx streets. The business has steadily increased, showing a larger volume each year, the present year being a banner one, having made an increase of over 20 per cent.

They manufacture a full line of mattresses, springs, lounges, couches, tables, all kinds of fruit crates, whiskey cases, and all kinds of turnings and bandsawings, besides carrying a full line of upholstering supplies. Their markets are in Rossland, Revelstoke, the Boundary, Trail East Kootenay, and all the ranchers in the Kootenays.

THELIN'S CIGAR FACTORY

J. C. Thelin, cigar manufacturer and wholesale dealer—This has been the best year in every respect since we have been in business. Our territory for wholesale trade includes the city, Ymir district, Slocan, Rossland and Trail, and part of East Kootenay. I think there has been an improvement everywhere, during the second half of the year certainly. Nelson city has made the greatest gain of all. We expect that next year will be still better, but if we do as well as we have done in the last months of 1905, we shall be satisfied.

YALE-KOOTENAY ICE CO.

The Yale-Kootenay Ice, Fruit, Fuel & Poultry company is an enterprise characteristic enough of Nelson. Its field of operations is not limited to the immediate environs of the city but extends north into Lardeau, west to Rossland, and east and south to Kootenay lake and the towns along the Spokane Falls & Northern railway, occasionally sending ice to Spokane and not infrequently to the Boundary. Its immediate business is ice, obtaining its supply from Mirror lake, in the vicinty of Kaslo, but it is already reaching out into the fruit industry which, in the opinion of its management, is likely to become the first or nearly the first industry of the district. Eleven thousand trees have been planted on its ranch on Kootenay lake, near Kaslo, of which 400 were planted seven years ago. In connection with this field it is the intention to erect cold storage plants at Mirror lake and at Nelson, dealing wholesale fruit from either of these points. Founded ten years ago by K. K. Bjerkness, the concern in 1903 was taken over by a local company of whom the directors are K. K. Bjerkness, president and manager; J. Laing-Stocks, secretary; Dr. Rose, Blake Wilson, G. Erickson, John Keen and Andrew Leet, and with the added capital thus forthcoming the business has been gradually extended with the growth of the district.

NELSON COKE & GAS CO.

The Nelson Coke & Gas company, A. E. Shipley, manager—Nelson is the only city in the interior supplied with gas for lighting, cooking and power purposes, as well as with electricity. The company, headed by W. H. Pearson of Toronto, as president, has a capital of $250,000 and its property in the city includes the works on the C.P.R. flats, mains throughout the city, etc., representing a value of about $65,000. The plant was opened for business in June 1900, and is so constructed as to be capable of supplying gas for a city of 25,000 people. The annual receipts have grown steadily and now amount to about $14,000. At the present time some 290 meters are in use, as against 260 a year ago. No extensions were undertaken last year but the management has now under consideration the extension of mains eastward on such streets as Silica, Carbonate, Robson and Latimer, which will take in the high school which is not at present supplied with gas and where it is needed for laboratory work. The manager says the demand for gas stoves for cooking purposes is one of the main features at the present time and he thinks power for short periods can be supplied economically by the meter system.

NELSON MARBLE WORKS

Another of the budding industries of this district which rely upon the power furnished by the city for its maintenance is the Nelson Marble Works, Shackleton & Simpson, proprietors. Unpretentious in character, yet the marble works is the only industry of the kind in the whole of eastern British Columbia, the owners sending their product into the Northwest as far as Calgary and Edmonton. Two quarries, one at Salmo and one at Lardo, supply the rough material which is hewn and polished into form on Nelson's water front. The machinery involved comprises a circular saw, a rubbing bed, a polishing machine and a band saw, the last being able to cut quite a large number of slabs simultaneously, being a rough looking but ingenious piece of machinery. The output of the works consists principally of copings, wainscotings, table and bar tops, monuments. The firm is doing well and declares it has orders in hand which will cover the next five or six months.

YALE-COLUMBIA LUMBER CO.

The secretary of the company was out of town at the close of the year and detailed figures for the past year were not obtainable. When the mill on the waterfront, adjoining the city wharf, is in active operation, an average force of 55 men are engaged, with a monthly payroll of about $3500. During the past year the total cut was about 4,000,000 feet, about the same as in the previous year. The annual capacity of the mill is very much greater, but for business reasons the cut was kept down to the figure given. No additions were made to the plant last year and the company's plans for the next 12 months are not yet announced but it is stated that about the same amount of lumber will be cut as in 1905.

BRUSHES

A brush that bears on its handle the name of an old-established and reliable maker, such as Beckh, is sure to be superior to unknown or nameless varieties. The name is the manufacturer's guarantee of value. If you want the best in brushes ask for

Beckh's

QUALITY FIXES THE VALUE

POMMERY

THE HIGHEST PRICED CHAMPAGNE SHIPPED FROM FRANCE

THE HIGHEST PRICED CHAMPAGNE ON THE LONDON MARKET

MUSSEN'S OF MONTREAL

AN UP TO DATE MACHINERY SUPPLY HOUSE

POINTERS FOR MINE MANAGERS AND CONTRACTORS

On another pages appears an advertisement from a Montreal machinery and supply house who seem to look favorably on the chances for business in British Columbia and who think that the special mining number of The Daily News covers the field. As this advertisement was entirely unsolicited, it may be taken as a special compliment.

Messrs. W. H. C. Mussen and company of Montreal, in a comparatively short time have won their way to an enviable position among the machinery houses of Canada. While their business has been largely with contractors they are handling many lines that are of interest to mining men, their special work being the introduction of labor saving machinery of the highest quality. The machine for which they are probably best known is the Smith concrete mixer, which can be seen at work on nearly all the most important concrete and cement works in Canada and the United States. The Smith concrete mixer is beginning to find its way into British Columbia, two of them are close to home, one of the late patterns being at the West Kootenay Power & Light company's plant and another, not quite so modern a machine—on the city power plant. In Vancouver, Victoria and other parts of the province where concrete work is going on these machines will be found at work. It is evident that concrete and cement are the materials most in favor for constructional work in the east now. There were more than 30 of these machines in use during the last season on the island of Montreal.

Anyone who was at the St. Louis fair will remember the fine exhibit made by the Austin Manufacturing company with their famous gyratory crusher. This crusher received the highest awards over all competitors. The company was awarded no less than two grand prizes and three gold medals. Messrs. W. H. C. Mussen and company are confident that for all except the very smallest work the gyratory crusher will displace the jaw and they feel therefore especially pleased that they should have the introduction and selling of the best gyratory crusher made entrusted to their hands.

How many of our readers are aware that a big box car can now be loaded with coal in less than eight minutes? Yet this is the time taken by the Ottumwa box car loader, working on the C.P.R. dock at Fort William, according to the foreman in charge. This machine is another clever invention which is being introduced into Canada by W. H. C. Mussen and company. The Fort William machine was put in some time ago and since then other machines have been put to work in different parts of Canada.

For the coming year this enterprising firm has put themselves in a position to tender, not only for mining supplies, such as steel, fuse, drills, wheelburrows, cars, rails, etc., in the largest quantities but also for complete mining or metallurgical plants arrangements having been made with the famous house of Fraser & Chalmers, Limited, whose machinery and plants are in operation all over the world, but especially in the enormous mining operations in South Africa, speak for themselves. A short time ago Fraser & Chalmers, Limited, sold their Chicago works and American business to an American combination, and put all their energies into making their works at Frith, Kent, England, the finest in the world, and the wisdom of this course has been amply demonstrated both to their shareholders and to their customers all over the world.

Mining by steam shovel was for many years a dream, but it is now an accomplished fact as the mining men of British Columbia, and especially of the Boundary district, know. Whenever steam shovels are discussed the name of Bucyrus is well to the fore, and this is another line which W. H. C. Mussen and company control for Canada. Knowing the demand there will be for steam shovels for mining as well as for railway work, the Bucyrus steam shovel is now being made in Canada, and Messrs. W. H. C. Mussen and company will soon be delivering steam shovels from stock in the same way they do Smith concrete mixers of even the largest size.

It is often necessary to break the ground ahead of a steam shovel, some times in deep cuts. For this purpose a prominent railway contractor spent a good deal of time in experimenting with deep blast holes and the result of his work has been the Cyclone contractor drill, which drills a three inch hole to any depth for which a blast hole could be at present required. It may interest our readers to know that the deepest blast holes so far known to us were put down in some construction work of the Pennsylvania railway, near Safe Harbor, Pa.,—holes were put down purely for blasting purposes of no less than 35 feet in depth. An account of this most interesting work will be found in the Engineering Record of Oct. 28, 1905. The Cyclone contractor drill, with the Bucyrus steam shovel will indeed remove mountains. This combination is at work removing a small mountain in the city of Pittsburg, where more land is wanted for building purposes. W. H. C. Mussen and company are now introducing the Cyclone to mining and contracting men who are interested in the removal of mountains or any excavation work.

In conclusion it may be remarked that any of our readers who are in Montreal should not fail to call at the offices of this firm where they will receive a hearty welcome that will remind them of the west. Everyone who has been in Montreal more than a few hours will remember the office on the ground floor at the corner of St. James street and Victoria Square. There are few peovle who do not know 29 St. James street, with the big show room extending along Victoria Square, only shut off from the bustle and traffic of the heart of the city by enormous plate glass windows. The mining and engineering papers of Canada, the United States and the British Isles are on file, with every facility for writing, telephoning and telegraphing which Montreal affords. The Daily News will be found there day by day.

Mining men who visit London, England, should not fail to call on Fraser & Chalmers, Limited at 3 London Wall Buildings, where they will find the same advantages only on the larger scale that the city of London affords, with its population equal to Canada. Knowing the demand there will be for steam shovels for mining as well as for railway work, the Bucyrus steam shovel is now being made in Canada, and Messrs. W. H. C. Mussen and company will soon be delivering steam shovels from stock in the same way they do Smith concrete mixers of even the largest size.

The Daily News had occasion to telegraph Messrs. W. H. C. Mussen and company, and the promptness of their reply was certainly a surprise. The message was sent from Nelson over the C.P.R. telegraph service at 1.30 p.m., and the reply was received from Montreal at 3:30 p.m., just two hours later. Having had this experience of their promptness we are not surprised at the success which this firm has made, and we hope that our readers will test their abilities as occasion may arise.

Rough, icy roads, sharp snags, or the hardest wear won't hurt Lumberman's and Boots—they're made to stand rough usage.

Weatherproof, waterproof, snag proof, comfortable. All styles. Get a pair this winter. "The mark of quality" on every pair.

ARMOUR CLAD

We design and build complete CRUSHING PLANTS of any capacity desired,

We invite correspondence and will promptly furnish catalogs and complete information.

The Jenckes Machine Co., Limited

B. C. OFFICES: ROSSLAND AND VANCOUVER
WORKS: SHERBROOKE, QUE.

Gates Rock and Ore Breakers

Indispensable to most mining operators. The "K" Breaker is stronger and uses less power per ton broken, than any other Easily oiled. Never clogs. See Catalogue 110.

Allis-Chalmers-Bullock

LIMITED.

Works, Montreal, Branch office Nelson.

THE YEAR'S CIVIC RECORD

MEMBERS OF COUNCIL CONFRONT SERIOUS PROBLEMS

POLICE AND FIRE DEPARTMENTS PROVE EFFICIENT

The city council of 1905 has done harder work than any other council in the civic history of Nelson. A special feature of the year's proceedings is that four different names appear as chairman of the council, namely, John Houston, mayor, and aldermen Malone, Bird and Gillett, as acting mayors in succession.

The meetings of the council numbered 25 regular, 7 adjourned and 11 special, besides an unrecorded number of informal meetings.

Only nine bylaws were introduced during the year. Most of these are formal, such as the annual overdraft bylaw and the assessment bylaw. Only one was submitted to the ratepayers, namely, the bylaw providing for a new public school building. It met with defeat.

Of the other bylaws the most important were those referring to the fire department and the office of mayor. A bylaw, No. 159, introduced by alderman Annable, and adopted by the council, provided a constitution for the city fire department which removes it for ever from the blighting influence of the spoils system. Another bylaw of equal importance was No. 164, proposed by aldermen Kirkpatrick and Malone to regulate the salary of the mayor. It was called for by circumstances unique in the history not only of British Columbia and of Canada, but probably of the British empire. It provides that a mayor's salary ceases when he leaves the city limits without the knowledge or consent of the council. The aldermanic board of 1905 have faced many difficult tasks with a public spirit and a willingness to sacrifice private interests which is entirely to their credit, and an inspiring example to their successors during the next and succeeding years.

FIRE DEPARTMENT

Chief Sargent, having been in charge of the city fire department for only nine months, could report only on that period. The following figures are given from the report he is preparing for presentation to the council:

Since the beginning of April the brigade has responded to 17 alarms, of which two were false, the offenders not being detected. Of the other 15 only two were serious, those which resulted in the destruction of the Victoria and Grand View hotels, the latter of which resulted ultimately in the loss of one man's life.

The brigade has improved during the year in efficiency and harmony. The equipment has been improved by the addition of a Sargent life saving net. In 22 practices during the last nine months the members of the permanent force and the call men have acquitted themselves to the satisfaction of the chief.

POLICE COURT RECORD

The number of offenders who faced the city police magistrate during 1905 was 201, as against 246 for the year 1904. The great majority were charged with comparatively trifling offences under the vagrancy act, or under city bylaws.

Of 12 cases of theft, one was sent up for trial at the supreme court, and the accused was acquitted. In the other 11 cases the accused elected for summary trial, pleaded guilty and were disposed of by the magistrate.

There were two cases of aggravated assault. One prisoner, who used a knife, received 23 months in gaol; the other, who used an iron bar, was given six months. One offender who admitted indecent assault, received a sentence of 2 years and 12 lashes.

FREDERIC S. CLEMENTS

CIVIL ENGINEER
DOMINION AND PROVINCIAL LAND SURVEYOR

Agent for obtaining Crown Grants, mine surveying, etc.

Room 16, K.W.C. Block
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ANNUAL MINING REVIEW

THE DAILY NEWS

SECTION NUMBER THREE

VOL. 4 NELSON, B. C., MONDAY, JANUARY 1, 1906 NO. 214

PROGRESS OF LEAD AND ZINC MINING IN 1905

Substantial Growth in the Output of Lead--Zinc Outlook Bright

Increased Facilities for the Treatment of Lead and Zinc Ores

(By G. O. Buchanan.)

The list of mines that have shipped lead to B. C. smelters may lend preliminary illumination to the subject.

From the returns that have been published monthly in The Daily News, I gather the following names:

St. Eugene, Sullivan, Slocan Star, Payne, Ivanhoe, Idaho, Highland, Reco, Ruth, Rambler-Cariboo, Ymir, Arlington (Erie), Alice, American Boy, Antoine, Bismark, Bluebird, Bosun, Cinderella and Medford, Comstock, Elkhorn, Enterprise, Fisher Maiden, Hewitt, Jackson, Last Chance, Lucky Boy, Majestic, Mercury, Monitor, Mountain Con, Neepawa, Nettie L., Paradise, Providence, Province, Red Fox, Silver Cup, Sunset, Triune, Tecumseh, Wakefield, Whitewater, Sovereign, Pontiac, Athabasca-Venus, Wilcox, Wonderful, Miller Creek Group, Echo, F. H. Hawkins, Lorna Doone, Canadian King, Bonanza, Nansen, Hampton, U. & I., Rustler, Ethel, Florida, Black Prince, Victor, Marion, Whitewater Deep, Dundee, American, Delphine, Defiance, Geo., Reggie, Goldbug, Hartney Group, Horseshoe, Keystone, Mohican, Vancouver, Waterloo, Sally, Tremont, Westmount, Arlington (Slocan), Adirondacks, Atlin, Baltimore, Beatrice, Black Prince (Trout Lake), Wm. Chamberlain, Charleston, Chambers, Empire, Empire (Camborne), Elkhorn (Slocan), Graphic, Helen, Kootenay Chief, Lightning Peak, Lone Bachelor, Lily May, No. 1, Ore Hill, Last Chance (Republic Group), Last Chance (Phoenix), St. Kaverne, Silver Hustler, Jo Jo, Bad Shot, Zuni, Winona, Silver Belle, Spyglass, R. E. Lee, Edna No. 2, Silver Queen, Golden Era, W. R. Winstead, Silver Leaf, Mountain Meadow, E. P. U., Queen Dominion, Skylark, Lucky Jim, Silver Cloud, Black Grouse, Waverly, Gibson, LaPlata (*formerly Millie Gibson*), Slocan Boy, Wellington, Cowboy, Crescent, Lou Dillon, Bay, Omega, Queen, Emily Edith, Mountain Light, A. W. Munroe, Rambler, Tamarac, Riverside, Bounty, Combination, Daniel, Krao, Standard, Noonday, Home Run, Greenhorn, Mountain Boomer, Willow Grouse, Yankee Girl, Crescent (Greenwood), Blend, Canadian Group, Flint, Nil Desperandum, Vulture, Highlander, Noble Five (Trout Lake), Nettie M., K. P., Native Silver, Bell, Goldfinch, Arizona, Mountain Goat, Black Warrior, Baby Ruth, Chapleau, Eva, Coronado, Copper Chief, Bonnie Belle, Juno, I. X. L., International, Evening Star, Challenger, Black Hawk, North Star, Gold Park.

Of this list of 200 names, many represent prospects from which only trial shipments have been made, many others are gold, silver or copper mines, with lead contents of subsidiary importance, and of the whole list only about 40 are mines which have shipped during the last two years 50 tons or more of lead.

As to geographical distribution, the Coronado is in the Skeena mining division. Two small shippers are at Albert Canyon on the main line of the C P. R. The Paradise, Delphine and half a dozen others are near Windermere, northeast Kootenay. The Ymir, Arlington and a dozen others are on the line of the N. & F. S. railway. Another detachment of 15 or 20 is found in the Boundary districts, 20 more are in Trout Lake and Camborne districts. One, the Alice, is at Creston. The St. Eugene by all odds the "whale," is at Moyie, with no other mine of any kind within 30 miles. The Sullivan (next in size to the St. Eugene), and the North Star (until lately one of the very largest shippers), are close together at Kimberley, with no other producing mines near them, the balance (constituting a big majority), are on the island outlined by the waters of Kaslo river, Seaton creek, Slocan lake and river, and Kootenay lake and river.

Every creek that comes down from the interior heights of this tract, Kokanee, Woodbury, South Fork Kaslo, South Fork Carpenter, Four Mile, Ten Mile, Lemon and a dozen others is followed by a wagon road and every wagon road leads to lead producing mines, some of them famous as amongst the richest silver mines in the world, as well as for being up to 50 and 60 per cent in lead.

The production for the calender year (December estimated) has been as follows:

	Lbs Lead
Hall Mining & Smelting Co. (Nelson)	17,785,862
Canadian Smelting Works (Trail)	12,785,901
Elsewhere in B. C.	11,206,169
Exported in ore to Europe	15,525,835
	57,272,767
Equal	28,636 tons
Output, 1904	20,000 tons
Increase	8,636 tons

Except for the blank in shipments from the St. Eugene caused by damage to their works by fire (the months of October and November having been practically lost), the output for 1905 would have gone close to that of the banner year, 1900, which was 31,679 tons.

CANADIAN METAL CO.'S SMELTER, FRANK, ALBERTA, ONE OF THE BIGGEST AND MOST UP-TO-DATE PLANTS ON THE AMERICAN CONTINENT.

For the fiscal year ending June 30, 1905, the returns to the department of trade and commerce for bounty purposes show as follows:

	Lbs. Lead
Delivered to B. C. Smelters	33,704,932
Exported to Europe	21,972,999
Total	55,676,931
Equal to 27,838 tons.	
Bounty earned, home smelted lead	$240,058.71
Bounty earned, exported lead	97,157.30
Total	$337,216.01

For the year ending June 30, 1904, the figures were:

Lead production	13,397 tons
Bounty earned	$195,283.92

The term for which a bounty was payable upon lead in ore exported to Europe ended on June 30, 1905, and a proposition for the extension of the term was not favorably considered by the government.

On November 29, 1904, lead was quoted in London at £12 12s. 6d. and the rate of bounty payable was reduced, the rate of diminution being 1.3579 cents per 100 pounds of lead for each advance of one shilling and three pence above £12 10s. the whole bounty being wiped out by 57 of such advances.

The price went to £13 3s. 9d. on January 6, fell to £11 17s. 6d. on March 3, rose to £12 11s. 3d. on April 4, and from that time has steadily climbed until £16 was reached on November 29, *and the extinction of bounty payments*, for the time being, was accomplished.

On December 12, £17 8s. 9d. was reached, but at the moment of writing this, the quotation stands at £17 2s. 6d.

The extremes of variation for the last five years have been;

1900—September 15	£18.	0.	0.
1902—January 14	10.	5.	0.
1903—March 12	13.	15.	0.
August 16	10.	18.	9
1905—December 12	17.	8.	9.

That lead will remain permanently above £16 is not to be expected, but it is probable that we have seen the last of £12 lead. The predominant influence of the American Smelting & Refining company, not so much in favor of an extremely high price, as of a steady price, is beginning to be internationally felt, and there is beyond that, universal testimony to the fact that the legitimate demand for lead has overtaken the supply, that the demand is growing and bound to grow, and the sources of fresh suplies are not in sight.

Of our home-smelted product the electrolytic refinery at Trail is now treating 50 tons per day, or at the rate of 18,000 tons per annum. At the present moment the refinery is busy with orders for Canadian consumption, and it is probable that we can produce HtheAshr probable that we can count the Canadian market as good for, from this time onwards 18,000 tons per annum.

The product of the Trail refinery in both silver and lead exceeds in purity any hitherto produced upon a commercial scale, and both metals command a premium in competition with the product of other refineries.

The year has introduced an era in the provision of lead smelting facilities. In the early spring the Sullivan company's new smelter went into blast at Marysville in East Kootenay.

This smelter has two stacks of a capacity of 100 tons per day (only one of which has yet been in use) each, and the appointments and machinery embody the most modern features.

With commendable enterprise this company installed as a part of their plant a Huntington-Heberlien outfit of ovens and pots for ore roasting.

While nothing as to results has been given out by the company, the fact is patent that the smelter has run almost continuously with no ore supply except that afforded by their own mine, a grade of ore with some reputation as difficult, from a smelting standpoint.

That the object lesson has not been lost is evidenced by the fact that at both the Hall Mines and Trail smelters, similar roasting plants are under erection.

The Hendryx smelter at Pilot Bay after nine year of idleness is undergoing renovation at the hands of the Canada Metal company, and it is announced that the lead stack will soon be in commission.

This latter company, of which C. Fernau, Esq., M.I.M.E., is the manager, and which has its head office at Nelson, and which has almost completed at Frank, Alta., a massive establishment for the treatment of zinc ores, proposes to have also a lead stack at an early date at Frank. This multiplication of smelters and introduction of metallurgical economies, should certainly foreshadow better treatment rates for the producer at an early date.

The subject of zinc will no doubt be fully dealt with elsewhere is this review, but it may be mentioned here that some profitable disposition of the increasing quantities of zinc ore developed in connection with lead mining in the Slocan and Ainsworth camps, had become the most serious problem confronting the mine owner.

The problem has been attacked from all sides, by local enterprise in the installation of separating plants, by foreign capital in the erection of the magnificent works at Frank, and by commission of enquiry under the direction of the most eminent living specialists, employed by the dominion government.

As items of special interest we have *room for but few*.

The long tunnel on the Rambler-Cariboo is scheduled to reach the ore body (at least the place where it ought to be) on May 1. Ore from stringers recently cut has shown values similar to those for which the shipments from the upper workings were famed.

The Monitor and Ajax fraction mine after a prolonged suspension of production has again entered the list of shippers, and its mammoth and completely equipped concentrating mill at Rosebery is in successful operation.

In the Ferguson camp the Silver Cup mine has large quantities of ore in sight and is ready to ship heavily.

The La Plata Mines on Kokanee creek (we once spoke familiarly of them as the Molly Gibson) have concentrating *works installed, and a bright furture* outlined.

A question of "apex rights" growing out of the 1892 Mineral Act, of which the contestants have been J. M. Harris of the Reco mine, and the Byron N. White Co., has resulted in much prosperity to the legal, and mining expert fraternities, and to a decision which for the present upholds the apex rights of the Byron N. White Co.

The Ivanhoe after holding for some years a place near the head of the procession as a shipper, has paused to take breath, and recover its ore bodies.

The old time Blue Bell, now in the hands of the Canada Metal Co., is being put in shape for heavy production, and will be an important factor in feeding the works at Pilot Bay and Frank.

In the Slocan camp the "leasing system" has come to stay, having proven profitable to both parties concerned, and the Payne, Whitewater, Whitewater Deep, Wakefield, Lone Bachelor, Hewitt, Emily Edith and a host of others are under operation on that basis.

Extensive works for the corrosion of lead were established during the year in Montreal by the Carter White Lead company. The contract for their supply of pig lead for a term of years is held by the refinery at Trail. Their method of corrosion is new and improved, and this coupled with the perfect freedom from adulteration of the lead from Trail has enabled them to put upon the market a grade of paint lead never equalled. The works are rushed with orders, and their requirements of raw material accordingly increased.

Largely as the result of the persistent agitation begun and for the last seven years carried on in this district, the finance minister carried through Parliament at its last session a bill increasing the duty upon corroded lead from 5 to 30 per cent.

At a sitting of the Tariff Commission held in Nelson in September, interested parties were heard upon the subject of an increase in the duty upon other lead products (including pig).

The Tariff Commission is expected to *report at the coming session*.

In this connection it may be mentioned that the finance minister has the prospect of a grateful relief in the matter of lead bounty payments for the current fiscal year.

Under the dwindling rates at which *bounty has been payable since July 1*, the earnings have been kept down to about $80,000 and should lead remain above £16 until June 30, the surplus will be larger by $420,000 than was expected.

ZINC OUTLOOK IN KOOTENAY

(Special Correspondence.)

The chief features in the Kootenay zinc situation in 1905 were the appointment by the Dominion government of a commission, consisting of experts of the highest rank, and the completion of the zinc separation plant of the Kootenay Ore Co., Ltd., at Kaslo. The position at the end of 1904 was that the Kootenay mine owners were thoroughly awake to the necessity of so working their lead mines as to save all the zinc ores which occurred in combination or alternately with the lead. With this object the Slocan Star, the Ruth, and the Jackson mines had remodelled their mills and altered their mill practice so as to admit of making a separate zinc concentrate in addition to the lead product, for which the mills were originally intended. The Monitor mine, of Three Forks, also constructed at Rosebery a water concentration plant adapted to the saving of separate lead and zinc products; and the Wakefield mill near Silverton also became a producer of the two materials. It is the case, however, that economical mill practice does not admit in this district of producing a zinc concentrate higher in grade than about 36 per cent zinc; and as this material does not pay to ship in the absence of high silver contents, which only very rarely occur, it was necessary to subject this product to a further treatment for the purpose of bringing up its zinc contents to a marketable point. This has been the object *of the magnetic separation plant* at Kaslo, which is now running successfully on these lines and is treating 36 per cent and 37 per cent zinc concentrates and raising them to a shipping product of about 50 per cent zinc with a a high rate of efficiency in the process. *As a number of different ores have* now been tested with good results, this plant has an important bearing on the situation throughout the Kootenay as demonstrating the possibility of making a paying product out of a material which had previously not paid to move, just such a product as the zinc smelters in Europe and the United States are most anxious to secure, as the iron and lead contents are reduced to a minimum without an undue reduction of the sulphur contents which are a valuable asset in many plants.

This year has also seen the commencement and almost the completion of a large and important zinc smelting plant on the line of the C. P. R. at Frank in Alberta; the Canadian Metal Co., Ltd., an incorporation of large French capitalists, besides putting up a large and complete plant with no sparing of cost, have acquired some of the zinc producing properties on Kootenay lake, in addition to the old Pilot Bay smelter and concentrating plant, which latter is being adapted for the concentration of their zinc ores when necessary. Until the Frank plant is completed and in operation it is too early to speak precisely of the effect which it will have upon the encouragement of the Kootenay zinc industry in general; but that will be demonstrated during 1906, and in the meantime it is an important factor in the situation that the outside buyers of zinc ore are to have competition from *an extensive and up to date local smelter*. It is naturally unreasonable to suppose that such a plant will be unable to cope with outside competition, and there is no doubt that, other things being equal, the local producers will be most glad to do their part in contributing to the maintenance and prosperity of a local manufacturing industry.

The mines which produce clean zinc ore of grade sufficiently high for shipment without treatment have turned out considerable quantities during the year, led by the Lucky Jim. Mr. George W. Hughes's great mine at Bear Lake, which alone contributed several thousand tons of ore averaging about 54 per cent zinc. A very noticeable feature in the situation during the year has been the attention paid by investors to the *possibility* of acquiring good zinc properties. More than one of these changed hands at prices which would have been impossible a few years ago; and there is no doubt that with the increasing facilities for making marketable products from every grade of zinc, this district *affords one of the best openings on* the continent for investment at the moderate prices resulting from a period during which zinc and zinc properties have had no demand.

The present high price of zinc, over £28 per ton in England, the highest price on record, taken with the largely increasing consumption of this metal and the fact that the reserve stocks have been entirely depleted, point to a continuance of the favorable conditions for the zinc mining industry. There is no sign of diminution in the demand for galvanized iron or for brass, and in other directions zinc is finding new fields of profitable employment which open up infinite possibilities for its future. The world's production of spelter in 1904 was 618,770 long tons, and that of the United States 166,700 tons. In 1896 the world's production was 417,122 and that of the United States, 72,767 tons; whilst in 1886 the world's production was 294,402 tons, and that of the United States 38,072 tons. These figures, taken in connection with the fact that the consumption has pressed so closely upon the production as to leave practically no reserves of stock on hand, speak eloquently as to the future of a district in which the zinc ores are abundant *and of good quality*.

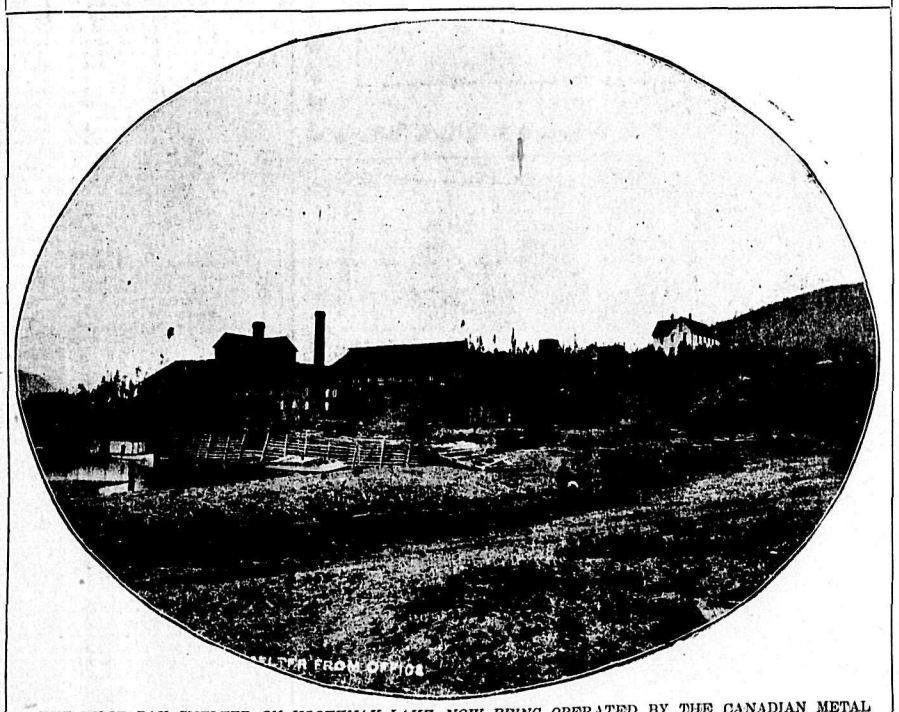
The following recent description of the Kaslo zinc separation plant taken from the Sandon Mining Standard will be of interest:

The new separation plant of the Kootenay Ore Co. at Kaslo is working smoothly. *The plant is operating on* the Ruth ore and turning out a product ranging from 47 to 52 per cent. There are some points to be noted in connection with the magnetic process, that are being demonstrated by this company. The electro magnetic machine used is the Ding. Its capacity is equal to any of the high priced machines in treating roasted ore. The price of other makes ranges from $2200 to $5000, and from three to five of the Ding machines can be installed for about the cost of one of the others. As the Ding is about the same capacity, for the cost of one of the other machines, by installing the Ding fully 200 to 400 cent more capacity can *be secured. This is a very important* consideration.

Another point is in the roasting apparatus. The capacity should be large to cover the installation as needed of more low priced separators. The White-Howell roaster is used at Kaslo and does the work very satisfactorily. The question of cooling the roasted ore requires further experimentation. The cooling apparatus used is mainly experimental, serving the purpose of a conveyor as well as a cooler. The roasted ore as it comes from the spout is just a dull red, and scarcely any sulphur odor is in evidence. The roasting is also a subject for experiment to secure the best results. The conveyors to the screens are all of steel, work well and with little dusting. Sizing by screening is done after roasting, another very good point greatly preferable to sizing before, because of the defiagrating action of the heat on the ore.

The iron impurity of the Ruth ore tested is the siderite with a good percentage of pyrite. The pyrite and blende are quite intimately commingled necessitating finer crushing of the middlings. It is probable that the six per cent tailing loss in zinc comes in the pyrite. The siderite generally breaks clean, and is easily removed. With an ore carrying the siderite only for an impurity, such as the Jackson first class work will be done. The zinc loss will be much less, and the capacity per machine and roaster increased. The roast required will be very slight. Not much dust is in evidence, and what is could be done away with by suitable hoods over the rolls and elevator doors. Some fumes are perceptible, but this also can be remedied. As the roasting practice is improved upon better work all through will be done, and the small amount of fumes eliminatel.

The costs should not be heavy. The roaster uses wood for fuel which gives a good, long flame. Very little waste of heat by radiation is perceptible. Probably future practice will improve on the present plant, but it is a very distinct advance from the separation plant at the Payne mill. Costs will be much lower and the process more simple. The adoption of cheap separators and plenty of them, is a step in advance over former methods. Some are apt to believe that if the roasting could be cut out, that there would be a distinct economical gain. It must be remembered that in any event the material treated must be dried, and very little more time and fuel is required for the roast. To treat unroasted ores requires very expensive machines with limited capacity. Roasting allows the use of several machines which give a large capacity at about the cost of one of the former type. Great credit is due for the successful working out of the different problems to Mr. Alexander and his efficient staff, notably Mr. Herrman.



THE PILOT BAY SMELTER ON KOOTENAY LAKE, NOW BEING OPERATED BY THE CANADIAN METAL COMPAY, OF NELSON, B. C.

ST. MARY'S RIVER DISTRICT.

Within the past few weeks the bonding of several copper claims in the St. Mary's river valley district has been recorded. Colorado capital is largely *interested and development work is be*ing prosecuted under skilled supervision. There is reason to belive that extensive bodies of high grade copper ore exist in this locality and the work now going on, will in the future, in all likelihood, establish this fact beyond peradventure. The St. Mary's river district is well situated for economical mining.

MINERAL WEALTH OF NORTHEAST KOOTENAY

Construction of Kootenay Central Will Hasten Development

Fine Field for Investors Prospectors and Home Seekers

*What is officially known as the north*east Kootenay or Golden district, includes the Golden and Windermere mining divisions.

WINDERMERE MINING DIVISION

Generally speaking mining was at a *standstill* in the Windermere mining division during 1905. Rumors were current at the beginning of the year that the construction of the proposed Kootenay Central railway would be immediately undertaken. This railway would give the district access to the outside world and would provide transportation facilities for its mines, some of which have been developed sufficiently to enable them to maintain regular shipments of ore. At present shipping facilities exist only during the few months the Columbia river is navigable for steamers, but the intermittent nature of such transportation arrangements, which admit of the mines producing only for a short period in each year, has a discouraging effect on those owners who have long struggled against this difficu*lty and that of a sufficient labor sup*ply. The commencement of railway construction put fresh heart into mine and claim owners, with the result that for a time work was done on a number of undeveloped prospects as well as on the several developed mines, but when *it became evident that construc*tion was not to be vigorously proceeded with a reaction set in until work was confined chiefly to the Paradise, Lead Queen and Nettie M., the last mentioned being a recent discovery. On each of these three properties a small number of men are being employed for the winter.

From E. J. Scovil, of Wilmer, the following information relative to the Windermere division has been obtained:

The various mineral belts in the Windermere mining divison that extend from Findlay creek to Salmon river, on the eastern slope of the Slekirk range, have been partly prospected with good results. These include the following creeks and their tributaries: Findlay, Dutch, Johnston, Brady, Salter, Goldie, Toby, Horse Thief, No. 2, No. 3, and Salman creeks. This territory comprises an area of about 45 miles in length by 25 miles in width. The drainage area of the upper Kootenay above Canal flat has received but little attention from prospectors and not much is known of *the locations recorded from that part* of the division. In fact prospecting has been almost exclusively confined to the Selkirk range west of the Columbia lakes and river.

The country lying between the Rocky mountain and Selkirk ranges is rolling bench land, large tracts of which are under cultivation and yielding satisfactory crops. It is claimed by practical fruitgrowers that this part of the Kootenay will yet equal, if not eclipse, any other portion of British Columbia for fruit growing purposes. There is throughout the entire division plenty of water for irrigation.

The principal town in the divsion is Wilmer, which is beautifully situated on a bench above the Columbia river (west side) between Toby and Horse Thief creeks. It is the outlet from the mines and here are located the provincial government offices of the division, viz., the mining recorder's office, county court registry, etc. Other towns are Athelmar and Windermere.

This division offers inducements to *capitalists, prospectors and home*seekers. To the capitalist it offers a large field of promising properties from which to choose, some of which are paying propositions even under present unfavorable conditions of transportation. From the prospectors' point of *view it may be said that this large* stretch of country has as yet hardly been looked at, while the showings already uncovered indicate that the camp is destined to become one of the important mineral producing sections of the province. For the homeseeker there is available plenty of good land which can be obtained at reasonable prices.

The outlook is promising, for the construction of the Kootenay Central railway, which will traverse the district from north to south, has been commenced and will be completed without much delay. It is understood that construction work on a large scale will be undertaken next spring. It is expected that the Canadian Pacific railway will use this line in connection with the Crow's Nest Railway, to relieve the heavy traffic over the "big hill" near Field, on the C. P. R. main line; also that connection will be made with the Spokane International (the Corbin road) now being built between Spokane and southwest Kootenay. The provision of railway transportation facilities will no *doubt mark a new era in the develop*ment of the mining, lumbering and agricultural resources of the district.

During the past few years prospectors have restricted their explorations in the Windermere division largely to Toby, Horse Thief, No. 2 and No. 3 creeks and their tributary streams. The ledges found in these several localities have every appearance of strength and

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permanence. The following are the principal mining properties:

Paradise.—The Paridise mine is situated on Spring creek, a tributary of Toby creek. Total development to date consists of 5242 lineal feet of work. In the course of doing this work more than 6000 tons of ore were taken out, and of this quantity 2053 tons of a gross smelter value of $85.681 were shipped to the Canadian Smelting Works, Trail. The average return from ore shipped was, silver 57.94 ounces per ton, and lead 58.9 per cent. The work for the year consisted of more than 500 feet of additional development and exploratory work and three carloads of ore were shipped. The winter's work will be confined to extending the long tunnel (No. 4). Operations on a large scale will be undertaken whenever the transportation difficulty shall be overcome. The question of constructing an aerial tramway and putting in suitable reduction works is under consideration. A rough calculation made by the provincial mineralogist when he visited the mine in July, 1903, gave, if not of ore actually "blocked out" certainly "probable ore," about 50,000 tons, which quantity, there is good reason to believe has been largely increased by subsequent developments.

Nettie M.—The Nettie M. group is situated on the south side of Toby creek. It consists of three claims which were located last July by B. M. Washburn, who disposed of one-third interests to R. R. Bruce and Geo. Starke. Work was at once commenced on the property and two cars of high grade ore were shipped to the smelter before the close of navigation. The ore is a mixture of galena and grey copper, carrying about 0.5 ozs. gold, 160 ozs. silver per ton, 8 per cent copper and 25 per cent lead. The lode is a contact and is well defined; it is about three feet in width with a paystreak of 11 inches of clean ore and carbonates. The paystreak has been stripped for more than 800 feet. Development work includes numerous open cuts and two tunnels. No. 1 tunnel is in 125 feet; it tapped the lodge at a depth of 75 feet. No. 2 tunnel which is already well under way, will be driven about 800 feet and work will be continued throughout the winter.

Delphine.—The Dalphine group is on the north fork og Toby creek. Some 300 feet of development work was done on the property during the year and three cars of ore taken out under a lease, were shipped to the smelter. This ore gave a return of 85 ozs. silver per ton, 20 per cent lead and 2 to 3 per cent copper. Total shipments to date are about 200 tons of a gross smelter value of $13,100.

B. C. and Tilbury.—These claims are also on the north fork of Toby creek. Work was continued on the property during the past season under lease. One car of high grade ore was shipped and another car is sacked and in transit to the Wilmer landing.

Tecumseh.—The Teceumseh group is on McDonald creek. During the fall a shipment of 53.675 pounds of ore was made to the Trail smelter from which an averge return of silver 83 oz. per ton and lead 56.60 per cent was received. Total quantity shipped to date is 56 tons of a gross value of $4,349.79. The paystreak on this property is 18 inches wide, of clean ore; development work has been very encouraging.

Lucky Boy.—The Lucky Boy group contains four claims situated on the south side of Toby creek. Development consists of 134 feet of tunneling and many open cuts. Ledge is about 16 feet in width with a 12 inch paystreak. Ore is grey copper, galena and carbonates, assaying up to 281 ozs. silver, and 45 per cent lead. Work will be continued the winter through.

Black Diamond.—The Black Diamond group is a promising property on the north side of Toby creek. It will be a regular shipper when transportation facilities shall be provided. The ledge is 4 feet in width with 12 inches of silver lead ore averaging 53 ozs. silver, 78 per cent lead, and occasionally, 24 per cent zinc. Development work includes open cuts, prospect shafts and 337 feet of tunneling.

Sultana.—The Sultana group of three claims is on Michelson creek, a tributary of Toby creek. The ledge is 3 feet wide with 10 inches of clean ore and carbonates. Development includes 70 feet of tunneling and a number of open cuts in ore.

Hot Punch.—The Hot Punch group includes three claims on the north fork of Toby creek. On No. 1 claim there is a 65 foot shaft with a 12 foot drift. On No. 2 claim the clean ore ranges from 6 to 24 inches in width. On No. 2 claim 6 to 9 inches of clean ore is shown in 10 open cuts; this is galena and grey copper of an average value of about $100 per ton.

Outcrop.—The Outcrop group, on the north fork of Toby creek, consists of four claims, with two veins about 1400 feet apart. A series of open cuts shows a continuous shoot, varying from 8 in. to 2 ft. of clean ore, for 400 feet. A tunnel started about 300 feet below a surface cropping of ore will give that height of stoping ground when it shall cut the lead.

Silver Tip.—On the Silver Tip, on Toby creek, about 30 inches of clean ore have been uncovered for some 300 feet. Development consists of 445 feet of tunneling and a lot of surface work.

Duchess.—The Duchess group is on Dutch creek. The ore contains copper and gold. Development includes a 35 foot tunnel, open cuts and prospect shafts.

Lead Queen.—The Lead Queen group of five claims on B. D. S. creek, a tributary of No. 3 creek, promises to be a large producer of lead ore. All the claims are on one ledge which is about 10 feet in width, with up to three feet of clean ore running 65 ounces silver and 71 per cent lead. On the Lead Queen a crosscut tunnel encountered the lead at 264 feet at a depth of about 150 feet. A drift for 100 feet north showed 2 feet of clean ore and 6 inches of carbonates all the way, while to the south for 30 feet the clean ore was 3 feet wide and the carbonates 6 inches. Last summer much surface work was done on the Big Chief claim and a crosscut tunnel was started. The driving of this tunnel is being continued and it is expected the main lead wil be met with at about 200 feet in and a similar distance below the surface. On the First Effort claim a tunnel driven 150 feet on the lead was in ore the whole of that distance. The ore here runs higher in silver and lower in lead than on the Lead Queen and zinc occurs. Assay returns show silver 73 ounces per ton, lead 60 per cent and zinc 15 per cent. Besides the main lead there are two small veins the ore in which also runs well in silver and lead, but not much work has yet been done on these. The owners of the Lead Queen group are Thos. Brown, Hy. Schweisguth and S. A. Derr all working miners. In addition to the comparatively large amount of development work they have done, without outside assistance, they have built two substantial cabins and made a good rawhiding trail from No. 3 creek bottom up B. D. S. creek to Lead Queen basin. Ample supplies have been taken in and they intend continuing development work throughout the winter. The energy and persistence with which these three men have been and are developing their property is creditable to them and affords an excellent example which might be generally followed with great advantage to the mining industry of the province.

Steele.—The Steele group of two claims is on Williamson creek, a tributary of No. 3 creek. A crosscut tunnel entered the lead at 50 feet and the ore showing the full length of a 25 foot drift is 30 inches of clean ore and 6 inches of carbonates. On the surface the lead has been stripped for 250 feet. Assay returns are silver 65 to 70 ounces and lead 64 per cent.

MacLean.—The MacLean group, on MacLean creek, another tributary of No. 3 creek, is one of the higher-grade properties of No. 3 creek camp. The ore gives assay returns of 126 to 201 ounces silver per ton and 70 to 83 per cent lead. A tunnel and anumber of open cuts constitute the development work done.

Other Claims.—There are many other mineral claims on the several creeks above-mentioned on which more or less development work has been done, and still others on Boulder, Law, Horse Thief, No. 2 and Findlay creeks.

NORTHERN DISTRICTS

Mining in Skeena, Stikine and Atlin Divisions of Cassiar

Dredging and Hydraulicing Operations Carried on Successfully

The Cassiar district includes the most northerly region of gold mining in British Columbia. It embraces the Skeena division, in the southern portion of the district, and in the north the Atlin and Bennett lake sections and the Teslin, Liard and Stikine mining divisions.

Mining in this large district at present mportant only in the Atlin country. The prominent position Atlin takes may be illustrated by quoting the figures showing the value of the production in Cassiar in 1904, the relative production for 1905 being somewhat similar. Official returns gave the value of Cassiar's total mineral production in 1904 as $558,573, of which amount Atlin contributed $530,000; this sum bringing its total gold yield, during the seven years —1898-1904—it had then been producing, up to $2,995,000. Including the returns for 1905, Atlin's production has reached a total of between $3,500,000 and $3,600,000.

The Skeena division is now attracting notice, especially the coal measures of the Bulkley valley, which will be developed as soon as railway construction in that part of the province shall serve the double purpose of providing a local market for the coal and transportation to the coast. The Grand Trunk Pacific railway will pass through the Skeena country to reach tide waters on the Pacific coast and a provincial railway will make connection with the transcontinental line and thus give additional transportation facilities. The coal deposits on Graham island of the Queen Charlotte group will also be opened up when the railway shall have been constructed and steam shipping brought to its terminus. Meanwhile there is little mining being done in the Skeena division other than gold-copper mining on Princess Royal island, prospecting of scattered lode claims, here and there a little placering, and some gold hydraulicing on Lorne creek, a tributary of the Skeena.

In the outlying divisions—Teslin, Laird and Stikine—two hydraulic enterprises constitute all that calls for notice. These are the operations of the Berry Creek Mining company, on Thibert creek, and those of the Rosella Hydraulic Mining & Development company on Rosella creek. The former company has been operating for several seasons and, despite many obstacles, has of late years been the largest producer in the district. It has proved beyond a doubt that the ancient alluvial deposits of the locality contain gold in quantity sufficient to be profitably worked. It soon realized, though, that to obtain the best results it must enlarge its available water supply and plant, and this it has ben doing the two seasons last past with much energy and a considerable outlay of money. The operations of the 1905 season may be summed up in very few words, viz., that the season has been one of steady and expensive development—now fortunately completed. The little hydraulicing it was found practicable to do at the end of the season, gave excellent and profitable results, even from the top gravels of a slide hitherto considered worthless. Not much reliable information has been obtained concerning the season's work on the Rosella company's property, on which the putting in of hydraulic equipment has been in progress.

The reported discovery of ore carrying good values in gold and silver in the mountains bordering Windy Arm, a branch of Tagish lake, caused the northern part of the Atlin mining division to also come into prominent notice, the discoveries made having been in localities near the boundary line betwen British Columbia and the Yukon territory. The provincial government instructed the provincial mineralogist, upon his return late in the season from the Bulkley valley country, to proceed to investigate the reports and to determine as to the location of claims. As yet not much development work has been done to determine the permanence or otherwise of the mineral deposits, though appearances are promising. The following extract from the report of the provincial mineralogist published recently by the department of mines, will indicate the present position in regard to these discoveries:

"The first of the mineral discoveries referred to were made on the Windy Arm slope of a mountain ridge two or three miles north of the 60th parallel, and in this vicinity only has there been any extensive development of the surface prospects. Such development, however, as time has permitted to be made at this point, has proved so eminently satisfactory as to stimulate prospecting over the entire district, with the result that, during the past summer and autumn, a large number of claims have ben recorded along the range and on a parallel range lying to the east of Windy Arm. As most of these new prospects were discovered only late in the season, no very definite information as to them is obtainable, further than that the samples from the surface croppings brought in by the prospectors give very encouraging assays and seem to indicate that from the vicinity of the more developed claims there is a mineral belt perhaps three miles broad and extending southward into British Columbia for some distance."

DREDGING OPERATIONS

The following notes on operations in the Atlin district during the 1905 season have been obtained from Mr. H. W. Ebbs Canavan, C.E., who has been actively engaged there for several seasons, more particularly in connection with dredging operations:

The mining season just closed in the Atlin district has been a notable one from the fact that a large number of representative mining men from different parts of the country visited the camp, and went away greatly impressed with the many advantages possessed by this most northern placer camp in British Columbia. Experts in gravel mining were surprised at the immense area of auriferous gravel deposits and watched with much interest the work being done by the various dredging and hyrdaulic companies.

During the season several large tracts of placer ground changed hands for cash considerations. This will result in increased activity and the installation of new plants next year, which will mean the expenditure of a large amount of money, with a consequent increase in the output of gold.

The appointment of his honor judge Young, as resident judge, has done much to bring about confidence, also a clearer understanding of the mining laws and the ready adjustment of disputes. The progressive policy of the government in giving all possible encouragement to the placer miners by building roads and trails into districts discovered this year, will no doubt help to increase the gold output in future years.

By the cancellation of numerous mining leases by the department of mines this year, large tracts have been thrown open for staking that have been held under lease, instructions having been issued to the effect that leases cannot be held without bona fide attempts being made to work the ground covered by them.

The following summary of the work done by the different companies during the season will be of interest:

Dredging—being the latest method of working—has been watched with interest. A great deal depends upon the success of this method of working the Atlin gravel deposits. Owing to the delay in shipment of machinery, the Gold Run dredge operated by the British American Dredging Co., Ltd., of Philadelphia, was unable to start operations until June 17, at which time the old bucket lips had been removed and new ones put on, this work taking about two weeks. The new lips were of maganese steel, 10 inches wide, with a reinforced cutting edge 1 1-4 inches thick. With these extra strong lips and the liberal use of powder, it was thought to overcome the difficulty experienced last year in handling the heavy wash.

Although these improvements increased the yardage to a great extent, it was found that the dredge was too light to work with much success in this part of the district. The wear and tear of the machinery was too great and several serious breakages took place, notably that of a five inch driving shaft, a cylinder shaft and both spuds were cracked, one of steel, the other of Douglas fir, 30 inches square. A heavier boat, with stronger machinery throughout, aided by the use of dynamite, would handle a much greater yardage at about the same cost, and the values known to exist throughout the ground are sufficient to yield a good return. The dredge was working in ground about 30 feet deep, the first ten feet being composed of loose black dirt and some boulders, but easily handled and yielding some six cents per yard; the next ten feet was hard, tight gravel with small values; then three feet of a sticky, yellow gumbo, carrying little value; following this to bedrock is a tight yellow gravel in which large and small boulders are firmly embedded in almost a cement, carrying good values to bedrock, which is a hard, irregular diorite, cut in places by veins of soft serpentine. The constant pounding of the buckets against this hard material causes the gold to drop to the bottom and find lodgment in the crevices of the bedrock, and in this way a large percentage of the heavy gold is not recovered. While most of the boulders can be raised on the bucket line, they must be removed by hand derrick, which necessitates delay, and delay means less yardage.

The British Columbia Dredging company contemplated the building of its big dredge at Blue Canyon on Spruce creek, also the pole transmission line, and the dam to flood the dredge pond. This dredge is said to be one of the best yet constructed and is of the Bucyrus type, open connected 7 1-2 foot bucket, with a capacity of 3000 cu. yds. per day. It uses 250 horse power, which is taken from the British American Dredging power house on Pine creek, and carried over 7 1-2 miles of copper wire, at a voltage of 22,000 volts to the property, where it enters a transformer house, and is then stepped down to 400 volts, and carried thence to the dredge by insulated cable. This dredge is stronger and heavier throughout than the Gold Run dredge, and the bucket line is driven by a belt connection in place of a sprocket chain, as formerly. This relieves much of the constant jar noticed in the Gold Run dredge. Another great improvement is a Robins' belt conveyor, 100 feet long, which carries the tailings and deposits them behind the dredge to an elevation of 40 feet. Running along this conveyor ladder is a 6-inch sand pump, which keeps the fine material from accumulating under the boat. The bucket ladder and bucket line are built exceptionally heavy, to handle large boulders, which are taken off the ladder by derricks, placed on a car, run to the rear end of the boat and there dumped over causing a little delay. The buckets empty into a hopper from which the material passes into a revolving screen 25 feet in length, the biggest hole in this screen being about two inches in diameter. There all material is thoroughly washed by a spray pipe, the largest rocks being caught upon a grizzly and carried off in shoots on either side of the boat. The other material not going through the holes in the screen is caught and carried away on the belt conveyor, while the finest material, carrying the values, is passed over a largt area of gold saving tables fitted with different styles of riffles and supplied with quick-silver. After being thoroughly washed it is carried off in sluices on either side of the boat. This dredge was completed and the electric power turned on on Sept. 17. The starting of the new boat naturally had to be done with caution and the machinery thoroughly tested and adjusted, which took some days, so that very little work could be done the past season, the frost coming early at Blue Canyon, which is 1000 feet above Atlin lake. The two small cleanups made before closing down on October 17, were satisfactory to the management. The yardage handled was about 1300 yards per day. The ground upon which the dredge is working is loose gravel with boulders lying upon a sandy clay false bedrock, easily dug up by the dredge. The pay is found upon the false bedrock and generally throughout the gravel in the creek and benches. Under the false bedrock there is soft blue wash of unknown depth, carrying little values as far as prospected. A drill hole 70 feet deep failed to reach bedrock.

HYDRAULICING

Hydraulic operations throughout the district have been successful in point of return for the time operating. The 1905 season was a short one for some of the operators, owing to the unusually limited supply of water, consequent upon the open winter last year, and the exceptionally hot spring on Pine creek. The North Columbia Gold Mining company was very successful. Having had water the greater part of the season it handled an immense quantity of dirt with good results and its weekly cleanups were gratifying to many of the company's officers and stockholders who visited the camp during the year. With the increased water supply for which provision has been made, and the large area of ground of known value it holds, its returns should next year be very large.

The Willow Creek Mining company operated on its southern benches, having installed an entirely new pipe line last spring, with good results. A thorough prospect and examination was made during the summer of Tar Flat benches, on Pine creek, and the results warranted the purchase of this property. It is the intention of the purchasers to instal a large electrically driven shovel the coming season and to use electric cars for carrying off the tailings. This will be built on entirely new lines, the details of which are now being worked out. As the property is in the hands of practical mining engineers, formed into a close syndicate, there is little doubt they will make a success of their undertaking, especially as they have almost unlimited money for carrying out their ideas.

A small steam shovel has been successfully operated on Spruce creek during the season. The results have not been published but it is understood the management is well satisfied with the season's work. This method appears to be a good one for working many parts of the district.

It is contemplated putting in a dam on Pine creek at Surprise lake, thereby raising the lake several feet. This will conserve all the water that would otherwise be wasted during the winter and spring freshets and will give a minimum supply of about 13,000 miner's inches, which will be ample to supply the needs of the various companies operating on Pine creek.

During the season several new placer strikes were reported in outlying districts and a number of prospectors spent some time on these streams, but not sufficient to demonstrate the values, being unable to get to bedrock on account of water.

Some 20 placer claims were represented on Volcanic creek and a good deal of prospecting work done. The values recovered have induced the miners to determine to take hoists and pumps over there next season. The government is now constructing a trail to these new diggings.

On Ruby creek, a syndicate of miners, owning adjoining claims have sunk to bedrock and crosscut the creek channel, with good results. They are preparing for more extensive work next year.

Some 40 or 50 non-working leases on O'Donnell creek were cancelled, thus giving an opportunity for prospecting this valley.

NEW HYDRAULIC COMPANY

A new company has been floateed in Vancouver to operate two rich leases, each 80 acres, front, front on Quesnel lake, Cariboo district. The high channel included in the leases is about 150 feet in width and from 10 to 16 feet in depth, and it angles across the leases in such a manner as to include in all about 3600 feet of it.

This channel is apparently, so officers of the company maintain, a tributary of the Consolidated Cariboo Hydraulic Mining Co., Ltd., channel, and can be traced for a distance of about six miles through Big Wheel Flat, through several other claims now being worked with a very limited supply of water, through the two company leases and through the Likely Gulch property, which has paid well, as worked with a very limited supply of water for several years.

Coarse gold in nuggets ranging from 50 cents to $1.50 are common on the property.

CANADIAN SMELTING WORKS

TRAIL, B. C.

Smelters and Refiners

Buyers of

Gold, Silver, Copper and Lead Ores

MANUFACTURERS OF PIG LEAD

TRAIL BRAND

Which is produced by an Electrolytic Process, and is the purest produced anywhere. Also

BLUESTONE

(Copper Sulphate)

Of the very purest quality.

District output for 1905 close on to 1,000,000 tons

MINES OF BOUNDARY DISTRICT

Granby produced 100,000 tons more than in 1904

The expectation that the mines of the Boundary district would send to the smelters during 1905 at least one million tons of ore has not been realized. Not that this tonnage was beyond the output capacity of the mines, but that the closing down for about seven months of the Boundary Falls smelter and the consequent cessation of production during that period of the mines that had supplied the greater part of its tonnage, together with a temporary insufficiency of electric power at the Granby Co.'s smelter, prevented the ore production for the year from reaching the total it had been confidently anticipated would do. Still an aggregate output of about 930,000 tons is one that all interested in the advancement of the district may well feel proud of, more particularly since the increase the year witnessed gives excellent promise of proving a permanent one, and but a step in the march of progress towards the far more momentous results yet to be achieved. While, though there was a total increase of more than 100,000 tons in the quantity of ore produced in 1905 as compared with 1904, it must be admitted that the Granby Co.'s mines were largely responsible for this substantial improvement, their output having increased by about 100,000 tons. The mines of the Dominion Copper Co., which a year ago were being operated by the Montreal & Boston Consolidated Mining & Smelting Co., also show a substantial increase—about 43,000 tons—but against their gain must be placed a reduction in output of the Emma mine by about 29,000 tons and the Oro Denoro of 13,000 tons. It is satisfactory, though, to know that both these properties will shortly enlarge their output and so assist in swelling the total of production for the coming year. There is one feature of the situation however, that is in a measure disappointing, viz., that no new shipper appeared on the list of copper-gold producers for 1905. On the other hand, the high grade mines had several accessions to their ranks, while two—the Skylark and Last Chance—that had made small shipments in 1904, produced a much larger tonnage during the year just closed. It is noteworthy that the high grade mines produced an aggregate of about 2550 tons in 1905 as compared with about 3,200 in the two preceding years, 1903-04.

The following table will serve to show the approximate tonnage of the larger mines and the total of the smaller ones for 1905:

		Tons.
Granby Co.'s mines		645,000
B. C. Copper Co.'s mines:		
Mother Lode	180,000	
Emma	9,000	
		189,000
Dominion Copper Co.s mines		88,000
Oro Denoro		3,000
Sundry small shippers		5,000
Total		930,000

In the following notes of individual mines prominence has been given to the chief producers. It may be that several promising properties upon which more or less development work was done during the year have been omitted, but it is believed that on the whole this review well covers the mining industry of the Boundary district.

GRANBY CONSOLIDATED MINING, SMELTING AND POWER CO., LTD.

The Granby Consolidated Mining Smelting and Power Co. is the largest and most important mining and smelting company in British Columbia. It is capitalized at $15,000,000, of which $13,500,000 is issued stock and the balance of $1,500,000 in the treasury. Much of the issued stock is held in the United States and among its directors are men prominently connected with the copper industry of that country and others of high financial standing in New York. It owns a large and valuable group of mineral claims in Phoenix camp, Boundary district, and the biggest copper reduction works in Canada, the latter being situated at Grand Forks and distant from its mines about 20 miles by rail. The shipment of ore from its mines to the smelter was commenced in the summer of 1900, during which year nearly 65,000 tons was the output of its mines. The aggregate of all shipments to date is about 2,200,000, of which some 645,000 tons represent the production during the calendar year 1905. It may be mentioned that, after he had visited and examined the company's mines, Mr. John Stanton, of New York, who has been designated the "Father of the Copper Industry," was reported in the public press to have said: "The Granby ore body is the largest sulphide ore deposit I have ever examined, and my mining experience has extended to every variety of copper ore. It is analagous to the famous Rio Tinto, of Spain. The Granby ore is lower in copper, but it carries larger values in gold and silver. It is larger than the famous Tennessee deposit. Hitherto sulphide ore bodies from 40 to 80 feet wide have been considered large, but this one at Phoenix eclipses anything else I ever inspected. I don't know of its equal on the continent. The millions of tons of ore in sight and the vast stopes proved a veritable revalation to me. I believe the Granby can operate at a profit, no matter to what figure copper might fall. With the advantage of gold and silver in its ores, it can produce copper at a price that would put less favorable mines out of business."

The development work done in this company's mines during eleven months of this year (to November 30) totalled 5,339 lineal feet, consisting of 1,878 feet of sinking and raising and 3,461 feet of cross-cutting and drifting. The total development for all years is 32,183 feet—more than six miles of underground work. This leaves out of account the large area of stoping and open quarrying. Additional prospecting was done by means of the diamond drill. The tonnage of ore shipped during eleven months was 575,788 tons; the estimated production for December, 70,000 tons; a total for the year of 645,788 tons. Ore is being mined from the quarries or "glory holes" and from several levels down to 400 feet in depth.

Additions to plant and equipment were made in 1905 as follows: A mammoth crusher of the Farrel-Bacon style "B" pattern, made and supplied by the Jenckes Machine Co., Ltd., of Sherbrooke, Quebec. This crusher is a duplicate of one previously obtained from the same manufacturers. Its receiving opening is 42 by 30 inches, and its capacity per day of 10 hours 1,400 tons of ore broken to not larger than 8-inch cube. The heaviest single piece of this machine is 75,000 pounds and its total weight 120,000 pounds. New electric machinery, etc., was purchased from the Canadian Westinghouse Co., of Hamilton, Ontario, including one 75 horse-power locomotive, one 75 horse-power generator to operate locomotive, and three 75 horse-power induction motors. About 1,000 feet more of tramways were constructed and another crusher building and more ore bins were erected.

Further enlargement of plant is intended, the Jenckes Machine Co. having been given an order for a 150 horse-power double drum electric hoist. The drums are to be conical in shape; dimensions, 7 feet in diameter at the larger end, 5 feet in diameter at the smaller end, and 5 feet long. By means of friction clutches each drum will be operated independently of the other, and both will be controlled by powerful brakes. The capacity of the hoist will be a load of 10,000 pounds raised at a rate of 700 feet a minute. Its shipping weight will be more than 50,000 pounds.

During the year the company materially increased its mining holdings at Phoenix by acquiring there the Monarch group, the Marshall group, the Missing Link and the Gold Drop group, all adjoining the properities previously held. These acquisitions will facilitate the working of the mines heretofore operated by the company, and, with the large reserves of ore on hand will for a long time to come provide for meeting the demands of the company's smelter for an increasingly large supply of ore.

At an extraordinary meeting of shareholders the company recently decided to make application in the proper quarter for power to change the number and par value of the shares from 1,500,000 shares at $10 to 150,000 shares at $100. A dividend of three per cent on the capital stock, payable on January 15, 1906, was declared, total being $450,000. This will be the second dividend paid by the Granby Co., the first having been one of one per cent, amounting to $133,630, declared in December, 1903.

B. C. COPPER CO., LTD.

Mother Lode Mine.—The British Columbia Copper Co., Ltd., owns the Mother Lode group of six mineral claims in Deadwood camp, and the smelter at Greenwood. The company is a New York organization, having a capital of $2,000,000. It acquired the Mother Lode mine early in 1898 and has since operated it almost without intermission. The mine is situated about three miles from the smelter, with which it is connected by a railway, the C. P. R. having constructed a branch from its Columbia & Western Railway at Greenwood to the mine.

The ore bodies here are large. The main lode has a surface width varying from 80 to 160 feet. Its continuity has been proved by surface trenches along a distance of 1100 feet north from the main shaft to where it disappears under heavy drift, while a big surface exposure about 700 feet in an opposite direction indicates the extension of ore-bearing rocks to the south as well. The main shaft is down 350 feet and is being deepened. Long levels have been run at 200 and 300 feet depth, respectively, and a level will be opened at 400 feet as early in 1906 as shall be found practicable. The ore body, as mined at the 200 foot level had a width of 100 to 125 feet and the mine workings now show it to extend fully 90 ft. north from shaft. At the 300 foot level the workings are not so long, but the diamond drill has lately proved the occurrence of a shoot of ore at least 125 feet in length commencing from a point in the bore hole 17 feet beyond the end of the present level. As far as extended the workings on the 300 foot level have shown the ore body to be quite as wide as on the 200 foot level. The diamond drill has also shown that the ore goes down, a hole dipping at an angle of 75 degrees having been in ore of higher than ordinary grade for 100 feet before it passed into country rock.

The total output of the Mother Lode mine for five years—1901-1905—has been 754,000 tons, of which about 180,000 tons were produced in 1905. Practically all this ore was smelted at the company's smelter, the experience at which, from a smelting point of view, have been that the ore as a rule grows less basic as the works have been extended and deepened. That is to say, the proportion of iron oxide ore to the whole body has sensibly diminished, though there has been little change in the amount of other base constituent. The result of this has been to make it necessary to seek elsewhere ores running higher in iron. Consequently the company has obtained other mines from which to meet this requirement should there not be a sufficiently large supply of custom ores regularly obtainable for smelting at its works with the Mother Lode ore.

The present output capacity of the Mother Lode mine is about 600 tons per diem, but enlargement is being provided for. Extensions of development and additions to power equipment made in 1905 were part of the progressive policy the company is following. These were designed for the more expeditious and economical operation of the mine. Formerly there was a long double-tracked adit, known as the "mule tunnel," from which half a dozen raises had been made to the ore quarries above. The ore was delivered from this tunnel to a Jenckes-Farrel crusher having a jaw opening of 24x36 in. and a crushing capacity of 60 to 70 tons per hour, crushed to a maximum of 5 in. Under the improved arrangements, for which another large tunnel was driven, this intersecting the main shaft at which a big pocket was built to receive the ore, a second crusher, of like make and capacity, was installed near the shaft and two 4 to 5 ton self-dumping skips were substituted for the cages previously in the shaft. Briefly described the new arrangements are as follows: All ore, from every part of the mine, whether from open quarries or underground stopes, is centered at the shaft, where it is delivered into the large pockets which discharge automatically into the big skips that hoist it to the crushing plant bins. An effective device secures the continuous feeding of the crushers from these bins. After passing through the crushers the ore falls on a belt conveyor which takes it to the railway bins about 160 feet away.

Other improvement in connection with plant and buildings include the removal of two 60 h.p. steam boilers to a position near the big double-cylinder hoisting engine, where they will ultimately come into service when the work underground shall have increased to such an extent that the 32-drill air compressor will not be able to supply air for hoisting purposes as well as for underground operations. Carpenter shop, sawmill, diamond drill shop, new powder magazine, several small dwelling houses, storage cellar for food supplies, and other conveniences have been provided. The ore bins have been covered and sheathed and steam pipes placed between the sheathing and the inner walls of bins to prevent the freezing of ore in extreme cold weather.

For prospecting uses a diamond drill plant was purchased early in the year, since when drilling has been steadily carried on. Besides accomplishing much useful work in indicating where ore does not occur, the drill proved the presence of a number of valuable bodies of ore, the existence of some of which was not even suspected previously. The most effective work done was at the 300 foot level from which several holes have, as above-mentioned, disclosed the presence of large bodies of ore of excellent quality, and which may be expected to continue with depth. One of these large shoots of ore was found to be high in sulphides—a very desirable ore for controlling the matte in smelting besides carrying good metal values. Much more drilling will be done on the 300 foot level, to determine whether or not other ore bodies appearing on that level but not on the upper levels are continuous, particularly the deposits of magnetite.

The year's development work was as follows: The main shaft was enlarged, by the addition of a third compartment, from the tunnel entrance on the 60 ft. level down to the 300 foot level, this being used for ladders and pipes. The shaft has been deepened from 325 to 350 feet, and sinking is being continued. From the 300 foot level downwards the shaft is being made large enough for four compartments—two for the skips; one for men and timbers, etc., in which there will be an ordinary cage, and one for ladder way and pipes. Later the fourth compartment will be carried up to the 60 foot level, which is now the main entrance to the mine.

Most of the ore mined is still from the big open quarries, but an increasing quantity is being extracted from underground stopes. The big ore body about the shaft, on the 60 foot level, is still being explored, its limits not yet having been reached. The tonnage of ore taken from this body has been considerable, but that remaining is very large in comparison. To more expeditiously stope this ore an intermediate level has been opened, viz., the 120 foot level, from which stopes will be carried up to the surface or as near thereto as the ore shall be found of sufficient value to be mined at a profit. It is expected that by the time the large additions to the company's plant, particulars of which are printed on another page, shall be completed the quarries and the several levels down to 400 feet depth, and possibly to 500 feet, will all be in condition to supply ore in such quantity as will in the aggregate be equal to the then greatly increased requirements of the smelter.

With a view to more effective working of the power plant, it has recently been decided to substitute electric power for steam in some sections of it. At the compressor house a 500 h.p. induction motor will be installed to take the place of the four steam boilers at present supplying power. The steam cylinders of the Corliss compressor will be disconnected and the big fly wheel replaced by another of similar weight but grooved for a rope drive. At the crusher house 100 h.p. motors will take the place of the two compressed air engines furnishing motive power to the crushers. A small motor will run the power tools, etc., in the machine shop. The electric light generating plant will be dispensed with and the current for lighting taken direct from the power line. All the discarded machinery will later be utilized at other properties the company is working and at which electric power is not available.

Although the output of ore from the Mother Lode has not been much larger in 1905 than in 1904 (owing to the quantity of custom ores received at the company's smelter), the development work done and the additions made to plant and general equipment have added materially to the producing capabilities of the mine, so that by the time the ore requirements of the smelter shall be more than doubled, which will be on the completion of the enlargement of the works now being prepared for, the mine will be able to regularly maintain a tonnage output well up to the quantity the smelter will need.

Emma Mine.—The Emma mine, in Summit camp, a three-fourth's interest in which was last year acquired by the British Columbia Copper Co., the other fourth having been previously purchased by the Hall Mining & Smelting Co., of Nelson, shipped in 1905 less than one-quarter of the tonnage of ore that it sent out in 1904, the cause of this much reduced output having been that shipment of ore from open quarries was discontinued and the development of the mine along lines making for permanent working was entered upon. Early last spring the sinking of a two-compartment incline shaft was commenced. This shaft is now down 185 feet. On the 150 foot level a crosscut was driven north 60 feet. At that distance it entered the ore body, along with a drift which was run about 70 feet. The ore was found to be of exceptionally good grade as compared with that taken from the open workings, and the vein to maintain its normal width of 18 to 20 feet. Everywhere, so far explored, the vein has well defined walls and presents the appearance of being an ore body living down to great depth. The intention is to drift as far north in the mine as the ore shall be found to continue and stopes will be carried up until connection shall be made with the quarries overhead.

A well-built gallows frame, 58 feet high, was raised over the new shaft and the small hoist removed to it from the old workings. Hoist house, ore bin, and store rooms were built, and other necessary surface improvements made. It is the intention of the owning companies to install a complete electric compressor plant as soon as the West Kootenay Power & Light Co. shall be in a position to supply electric power at the mine. Meanwhile air for operating the hoist and machine drills is obtained from the steam-driven compressor of the Oro Denoro mine, which adjoins the Emma property.

During four years—1902-05—the Emma has shipped nearly 80,000 tons of ore, much of this quantity to the B. C. Copper Co.'s smelter at Greenwood, and the Hall M. & S. Co.'s works at Nelson. The ore possesses constituents that make it useful for fluxing silicious ores, consequently it is in demand at the smelters.

The mine is operated under the direction of the B. C. Copper Co., the headquarters of whose engineering staff are at Greenwood, nine miles distant, which arrangement is an advantageous one for all concerned.

Included in the Emma group are the adjoining Jumbo and Minnie Moor mineral claims but, although ore has been found in prospect holes, no development work has yet been done on them by the present owners.

DOMINION COPPER CO.

The Dominion Copper Co., Ltd., of New York, is a reorganization of the Canadian company of the same name which owned the Brooklyn-Stemwinder-Idaho group and the Rawhide, properties at or near Phoenix on which development work had been done and from which ore had been shipped by the Montreal & Boston Consolidated Mining & Smelting Co., Ltd., after it had obtained possession of them under agreement of purchase from the original Dominion Copper Co. The Boundary end of the Montreal & Boston Consolidated enterprise was a genuine and promisng mining and smelting enterprise was a genuine and promising mining and smelting enterprise, but the New York end was a stock-jobbing scheme which, fortunately for the good name of the Boundary dstrict collapsed before a great deal of harm had been done. Beside the old Dominion Copper Co.'s properties, the Montreal & Boston Consolidated (which, by the way, was a reorganization of the Montreal & Boston Copper Co., similarly the promotion of schemers located in New York and more interested in making money out of stock-selling than of legitimate mining and smelting) had the following Boundary properties: Athelstan and Jackpot fraction, in Wellington camp; Sunset group and Morrison, in Deadwood camp; and a three-fourths interest in the Mountain Rose, in Summit camp.

The standing of the new Dominion Copper Co., Ltd., is set forth in the following circular issued to stockholders by the president, Mr. Warner Miller, on November 22 last:

"Pursuant to the plan of reorganization under which the Montreal & Boston Consolidated Mining & Smelting Co., Ltd., conveyed its properties to your company the new board of directors was elected on July, 1905, and thereupon assumed the management of your company.

"The contemplated issue of bonds amounting to $700,000, was at once consummated. Out of the funds received from all sources, including the bond issue, your company has paid (1) the balance amounting to $339,158.79 due under the socalled 'Dominion' agreement for the purchase of stock of your company; (2) a large amount of debts of the Montreal & Boston Consolidated Co., which were specifically assumed by your company; (3) the charges incident to the reorganization and the expenses of general administration; and (4) about $50,000 for equipment, supplies, labor and other outlays in developing the mines of the company, and preparing to start the smelter.

"The company now has balances in bank aggregating about $115,000; and has mining and smelting supplies worth about $30,000.

"The assets acquired by your company comprised, among other properties, a large majority of the capital stock of the Montreal & Boston Copper Co., Ltd., which owns the smelter. After the present management assumed charge of your company in July last, Messrs. Munroe & Munroe asserted against the Montreal & Boston Co., a claim, amounting to about $17,000, for alleged services and advances to that company. The claim is being vigorously defended. The Crow's Nest Pass Coal Co. also asserted a claim against the Montreal & Boston Co., mounting to about $20,000 for coke alleged to have been furnished to that company about two years ago. In addition, there have been asserted against that company claims amounting to about $7000 for legal services alleged to have been performed by Canadian and New York lawyers, and other claims aggregating over $1,000. A Canadian firm of lawyers also demands $3068.70 for alleged services to the Consolidated Co.

"The assertion of these claims came as a surprise to the present management. Careful investigations regarding them were at once instituted. While claims against the Montreal & Boston Copper Co. are not liabilities of your company, it is claimed they are so far as valid enforcable against the smelting property and may have to be taken care of in some way.

"Your company appointed Mr. Samuel Newhouse as general manager of the mining operations of the company and employed Mr. M. M. Johnson as consulting engineer. The work of developing the mining properties of the company has been actively taken up. The smelter of the Montreal & Boston Co. not having been properly cared for was found to be in an unsatisfactory condition, and required extensive repairs. It is not properly located nor equipped to treat the ores economically for any great length of time. Preparations have been made, however, to start it. About 50 men are now employed at the mines and smelter, and when the smelter is in operation about 200 men will be employed.

"It is the intention of the management, acting under the advice of the general manager and consulting engineer, to ascertain as nearly as possible the character and volume of the ores in the various mines, and thereupon to determine the most expedient methods of handling and treating the ores. In order to obtain accurate and reliable information in regard to these matters it seems necessary to operate the smelter for some period at least. The smelter has been put in repair and it is expected that it will be blown in by December 1, and will be capable of treating from 600 to 700 tons of ore per day."

It may here be mentioned that one furnace was blown in at the end of November and the other about the middle of December.

The aggregate of all shipments to date from the several properties acquired by the reorganized Dominion Copper Co. is 163,000 tons. Shipments up to the end of 1903 totalled nearly 35,000 tons—about 24,000 tons by the Montreal & Boston Copper Co. and the remaining 11,000 tons by individual mines that later came into the Montreal & Boston Consolidated combine. In 1904 the last-mentioned company shipped from all these mines about 45,000 tons, and in 1905 nearly 74,000 tons. The balance of about 9,000 tons is the output of the Brooklyn, Stemwinder, Rawhide and Sunset since the present owning company commenced shipping a few weeks ago.

The Brooklyn and Stemwinder were equipped in 1904 by the Montreal & Boston Consolidated with new machinery and plant equal to handling 600 tons of ore a day, and ore bins, tramways and other surface works were constructed. Many thousands of dollars were likewise expended in providing the Rawhide with machinery, building gravity trams, and generally preparing the mine to produce a large tonnage of ore. Much energy was displayed by Mr. George H. Collins, superintendent of the mines, who had the properties in shape to supply more ore than the two furnaces at the company's smelter could treat.

The Dominion Copper Co., when it commenced operations, placed Mr. Thos. R. Drummond in charge of its mines, and under his direction work is proceeding in the Brooklyn, Stemwinder, Idaho, Rawhide and Sunset. At the Brooklyn the power plant consists of the low-pressure half of a 20-drill air compressor, 60 h.p. hoist, No. 8 Cameron sinking pump, etc. The compressor supplies air for the Stemwinder as well. The latter mine has a 40 h.p. hoist. Between them these two mines have 12 machine drills. Since work was resumed the Brooklyn shaft has been deepened 80 feet being now 430 feet in depth; development has been commenced on the 350 foot level, and stoping has been in progress at the 250 foot level with a daily output of about 250 tons. At the extreme south end of the Brooklyn 250 foot level, in Idaho ground, a raise met ore at 30 feet up—chalcopyrite in an irony gangue. A tunnel has been started on the Idaho from a point about 35 feet above the Great Northern railway. No development work is being done in the Stemwinder, but ore is being stoped at the 114 foot level and an output of about 50 tons a day is being made. At the Rawhide two more ore quarries have been opened since reorganization, and a tunnel has been driven under the ore bodies. A raise from the latter is in ore at 40 feet up. An air compressor has been ordered for this mine; it will have a capacity of 500 cubic feet of free air per minute which will be sufficient to run five machine drills. More open quarries have been started at the Sunset, where about 60 tons of ore are being mined daily. No work is being done underground in this mine.

The work on the several properties is of the nature indicated in the circular letter to stockholders above quoted, viz., to ascertain as nearly as possible the character and volume of the ores in the various mines, so as to determine the best methods of handling and treating them.

OTHER PROPERTIES

Oro Denoro.—The Oro Denoro shipped about 2900 tons of ore in 1905, bringing the aggregate up to nearly 35,000 tons. Work during the year was not on so large a scale as in 1904, but it is planned to considerably extend operations next year. The mine has a large tonnage of ore available, and, given a suitable smelting rate should prove a profitable enterprise.

General.—Of other copper-gold properties in the Boundary there is not much progress to report. Nothing was done on the Snowshoe during the year, which has been developed down to a depth of between 300 and 400 feet, and in 1902 and 1903 shipped 92,000 tons of ore. There were reports of the B. C. Cartered Co.'s B. C. mine, which in 1900-1903 shipped more than 100,000 tons of copper ore, being started up again, but these proved incorrect. The Senator was under bond to the Granby Co. for some time and nearly 2000 tons of ore were sent down to that companys works at Grand Forks, but the bond was not taken up. The Winnipeg having changed hands, an attempt was made to make it pay, but after about 150 tons of ore had been shipped operations were stopped. The Seattle, on the north fork of Kettle river was also worked for a time, but results did not encourage those who found the money to continue. Neither has the Volcanic a mountain of mineralized rock, roughly 1000 by 3000 feet, yet come up to expectations, values thus far met with in the ore in quantity not having warranted further expenditure on exploitation. The Earthquake, Golden Eagle, Pathfinder, and other north fork properties have, as a rule, remained inoperative as well, but it is thought that if the projected railway be constructed up this valley, work will be resumed and a fair amount of ore production follow.

THE HIGH GRADE MINES

What are known as the "high-grade" mines of the Boundary district include 20 to 30 properties, most of them within a short distance of the town of Greenwood. Of this number there are only five or six that have to date shipped more than 100 tons of ore, while a similar number have sent to the smelter less than that quantity. Together they have provided employment for about 150 men, and during rather more than two years have produced an aggregate of nearly 5800 tons of ore, much of it ranging in value from $50 to $100 per ton, and in cases even higher. The most important of these, from a production point of view, are the Providence, Elkhorn, Last Chance, Skylark, E. P. U., Crescent, Helen and Prince Henry. Others may yet come into prominence as they shall be developed.

Providence.—Much development was done by the Providence Mining Co. during the year, long drifts having been run, both north and south, at the 400 foot level, the incline shaft deepened to 500 feet, and a level opened at the latter depth. Several new shoots of ore were found, and the vein at the 500 foot level proved to be as strong and carrying as good values as at the 400 foot. During the year there was a temporary suspension of operations, resulting from litigation between some of the larger shareholders, but when the legal troubles were disposed of work was resumed, with better results than at any previous time. The ore reserves are now larger, as is shown by the fact that shipments for December totalled about 150 tons, with plenty of ore still available, as against 50 tons for the remainder of the year. New power plant, including a large steam boiler and a 10-drill air compressor, were installed in 1905, and substantial building improvements were also made. It is probable electric power will next year be substituted for steam, the mine superintendent's recommendations in this direction having been favorably received by the directors. The company is stated to be in a fairly good position financially, and should be able to again divide profits among its stockholders in 1906. The aggregate of all ore shipments made by the Providence mine to date is about 2,500 tons.

Elkhorn.—During the year a local company was organized to acquire the Elkhorn, upon which operations had been suspended owing to lack of capital for development work, which had not been kept ahead of stoping. Development is now being pushed, the ore shoot has been picked up again, a small electrically driven plant put in, and matters generally in a condition promising profitable returns. To date the Elkhorn has shipped 870 tons of ore, of which about 150 tons were produced in 1905.

Last Chance.—The Last Chance mine, owned by a Spokane company, was the largest shipper in 1905, among the high grade properties, its total having been 690 tons. Operations were resumed last year after a period of idleness, and much development work has since been done. Lengthy cross-cuts and drifts at the 100 ft. level have opened up bodies of ore up to 10 ft. in width, with about 2 ft. of galena running well in silver. The mine is equipped with a steam power plant and is being energetically developed under the direction of Mr. D. W. McVicar.

Skylark.—This property was acquired last year by a Phoenix syndicate, who have done well out of it, having, so it is stated, paid out of returns from ore shipped, all operating expenses and, as well, the instalments due on account of purchase of the property. The shaft is down 150 feet and some 600 feet of drifts have been run. Production this year totalled about 470 tons.

E.P.U.—Stoping has overtaken development work on this property which, during the several months it was worked produced 254 tons or ore, making its aggregate 722 tons.

Crescent.—A shaft was sunk 130 feet on the Crescent and 150 feet of drifting done at this depth. The vein averages 20 inches of solid ore, of which about 90 tons were shipped. Several prospect shafts have been put down on other veins a small electric power plant has been ordered and further development when this shall have been installed is being arranged for.

Helen.—The Helen Mining Co., of Chicago, did 276 lineal feet of sinking and raising, and more than 400 feet of cross cutting and drifting. Some 60 tons of ore were shipped, an air compressor and steam hoist installed, shaft house and ore house built, road constructed, and other improvements made. Drifting north and south is in progress. The shaft is done 210 feet. The ore body is five feet wide, with a paystreak of about 22 inches. Ore is being blocked out, but no stopes are being opened yet.

Prince Henry.—The Prince Henry-Abercraig M. & D. Syndicate has sunk a shaft 112 feet and drifted 67 feet, erected several mine buildings, and made a test shipment of 30 tons of ore. An electric hoist will shortly be installed. The ore is rich, running high in gold and silver; it is solid and 18 inches in thickness. Ore shipments were to be made from the end of the current month.

Preston.—The Preston Mining Co., of Chicago, has sunk a shaft 115 feet and run drifts and crosscuts 265 feet, beside having done a lot of surface stripping. A small electric hoist has been put in, shaft house and blacksmith shop built road made to mine, and a trial shipment of 23 tons of ore sent out. It is intended to commence stoping ore shortly.

Other Properties.—Among a number of other properties on which development has been done are the Bay, Don Pedro, Mavis, Bonnie Belle, Gold Finch, Gold Bug, Strathmore, Dynamo, etc.

FRANKLIN CAMP.

The section known generally as the Franklin camp is situated about 45 miles north of the town of Grand Forks, on the east branch of the north fork of Kettle river. The district is locally subdivided into three camps, viz., McKinley, Banner, and Mineral Hill.

McKinley Camp—The principal claims on McKinley mountain are the McKinley, Ajax, Jumbo, I.X.L., Manhattan, and Gold King. Much surface stripping has been done on these claims and on each there exist indications of the existance of large and permanent ore bodies, but there has as yet been comparatively little development to prove the extent of ore occurring here.

The McKinley claim is the only one on the mountain that has been even partially developed. Surface croppings make it appear that there are several parallel ledges. The largest has been tapped by a tunnel 220 feet long, and at a depth of 175 feet the ore is of good grade and carries a high percentage of iron. At 110 feet in from the portal of this tunnel a crosscut was run 115 feet to the right; at 45 feet it encountered good ore and continued in it for 70 ft. while shoots of high grade ore are known to be ahead. Numerous test pits and open cuts show this deposit to have a surface width of at least 300 feet. The average values the ore carries are stated as running 3 per cent copper and $1.50 gold and silver.

Two ledges have been encountered east of the main deposit, at 300 and 500 feet respectively. On only one of these has been work done to any extent. Open cuts were made at intervals of 50 feet along a distance of 250 feet, and a prospect tunnel was driven 30 feet on the ledge. The ore seems to have a width of 20 feet, with values running up to 10 per cent copper, and 10 oz. silver, and $1.00 gold per ton. The ore in the third ledge is of a similar grade.

The McKinley property is under bond for $200,000. It will be prospected by diamond drills next spring. There are sufficient timber and water on this group for mining purposes. A depth of about 1000 feet can be gained by tunneling some 1500 feet.

A prospect shaft has been sunk in a promising surface showing on the I. X. L. claim, situate about one mile west of the McKinley. Other properties on McKinley mountain give promise of opening up with development as satisfactorily as the McKinley.

Banner Camp.—On Banner mountain there are some exceptionally fine showings, notably on the Banner, Bullion, Homestake, Alpha, Mountain Lion, Gloster, G. H., and Tiger.

On the Banner a tunnel has been driven about 200 feet, cutting a ledge described as being 36 feet in width and containing copper ore worth $8 per ton. A prospect shaft 20 feet deep, is in silver-lead ore stated to be 3 feet in width and of a value of $60 per ton.

The bottom of a 50 foot shaft on the Gloster is in ore said to average 13 per cent copper and $2.50 per ton in gold and silver. Very little work has been done on the other claims mentioned as being in this camp, the holders seemingly being without sufficient money to develop them and not inclined to sell at prices prospective buyers think reasonable.

Mineral Hill Camp.—The principal properties on Mineral Hill are the Mineral Hill and Polard groups of claims. Both have excellent showings of copper-gold ore of high grade. They are still held by the locators, who do a little development work on them each year. A 40 foot shaft on the Polard is all in ore of good grade. A tunnel on

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the Mineral Hill is 140 feet in length but has not yet reached the ore body.

General.—The chief characteristics of Franklin camp are the general regularity of the formation (which consists of lime, porphyry, and conglomerate, surrounded by granite hills). The large size of the surface showings, the generally excellent grade of the ore, and the depth that can be gained by tunneling either in or to the principal ore bodies. The most pressing requirements of the camp are ample capital for development purposes, and railway transportation. In regard to the latter, an easy grade can be got to any property in the camp.

WEST FORK OF KETTLE RIVER

The west fork of Kettle river had more work done in 1905 in its mining camps than for several years, for the reason that the construction of the Midway-Vernon railway was commenced, the route of this line being up the west fork and over the summit to Mission creek.

Between Rock Creek and the confluence of the west fork with the main Kettle river are two camps—the Riverside and Crown Point. The former is about four miles above Rock creek; development work has been proceeding in it on a small scale, and occasional shipments of ore made. Smelter returns have been about $40 per ton, with values in gold and silver. The ore taken out in driving the tunnels, so it is claimed by the owner, pays development expenses. Most of the claims in Crown Point camp are crown granted, so, being low grade properties, little has been done on them of late years, nor will there be until the completion of the railway provides transportation facilities.

Up the main river, above the west *fork, only the annual assessment work* was done, except on the Silver Dollar and Mogul, which were further developed. Here again railway transportation is waited for. Most of the mineral claims in Silver Dollar camp are on the divide between the main river and the head of Beaver creek, up which latter a branch from the Midway & Vernon line will, it is expected, eventually be contructed from Beaverdell, this being the only practicable railway route known to reach this section of the district.

In Boomerang camp, about 10 miles up the west fork from its mouth, the only development work, other than assessments, done during the year was on the Enterprise and S. M. claims. This is a gold-bearing camp and values are good.

About three miles farther up, on the west side of the stream opposite Bull creek, the Monte Carlo group has been worked. A shaft was sunk 50 feet and drifts were run. The surface showings here are 5 to 10 feet wide and the ore carries good values in gold and copper. Thence up to Dry creek there was little work done, but between Dry creek and Curry creek there was activity on several properties principally on the Rambler, Sally group and Curry group.

The few men employed on the Rambler have been stoping ore of which there has been sacked four carloads that is estimated to average at least *$150 per ton silver values being high.* Now that there is snow this ore will be rawhided to the wagon road and shipped thence to the smelter. More men will be put on stoping ore until the snow goes. With the ore that is obtained from the high-grade shoot returns are expected to pay for development and leave a margin of profit beside.

The Sally has had an average of 15 men at work the year through. Three miles of wagon road have been constructed from Beaverdell up the hillside to the camp, the grade being 10 *per cent; and a two-story 32x32 feet* board and lodging house, and a 15x20 feet kitchen have been built. The year's development work has included a drift 620 lineal feet on No. 1 lead, one 75 feet on No. 2 lead, and one 64 feet on No. 3. Returns from the 9 carloads of ore shipped have met the expenditures, even after paying $16 per ton hauling charges from the mine to the railway at Midway. This was sorted ore, the second and third class grade ore having been stored for concentration later. The Vancouver Development Co., which owns this group, has a water power at the foot of the hill sufficient to operate a mill whenever one shall be put in. A number of slips and jogs and crushes met with in the long tunnel have caused the superintendent, Mr. Clement Vacher, much difficulty in carrying on development work, but as the next level will be in solid formation the stoping will not be so expensive. Driving south to catch the vein in solid ground is in progress; this will pass the big slip and be away from the ground that has been so difficult to work. Notwithstanding the obstacles thus far met with, the management is encouraged by the results achieved and is confident that the mine will pay its way and eventually provide sufficient funds for power equipment, and thereafter yield the shareholders dividends.

On the Curry group of five claims last summer a tunnel was driven 100 *feet on a vein carrying gold values up* to $24 per ton in an iron gangue. Work was also done on the Atlantic Cable Comstock claims. A little development was also done on several claims on Cranberry creek, on the west side of the west fork.

In Carmi camp, very little was done at the Carmi, which in 1902 shipped 885 tons of ore that averaged between $30 and $40 per ton. The small experimental stamp mill was not operated after last spring, but it is stated that a larger mill will be installed next spring and the mine be again worked.

Mr. Philip B. S. Stanhope and associates believe they have met with the Carmi lead in a crosscut they ran on the May claim near the Butcher Boy boundary. The character of the ore they extracted from their tunnel left them no doubt as to their having struck the true lead, which had faulted on the Butcher Boy, after passing out of the Carmi, and which had not previously been traced beyond the fault. This discovery is regarded as likely to be of much importance to Carmi camp.

From Carmi camp north much prospecting has been done in places up the creeks the Midway & Vernon railway route follows to the summit of the divide between the west fork and Mission creek, the latter being on the Okanagan slope of the divide. Many claims that had been allowed to lapse have been restaked, and on some of these *magnetic iron veins carrying* a little copper and gold have been found. The final location of the line of railway and the construction of the road is being looked forward to with eagerness, the feeling being general that after the west fork shall have been provided with suitable transportation facilities it will become a productive section, in some instances, of high grade ore that will yield good profits above the cost of mining, freight and treatment.

RATHMULLEN MINES

The Rathmullen Mines, Ltd., of Rossland, owns six crown granted and several unsurveyed mineral claims, all situated in Summit camp. Development has been steadily continued, and it is expected that at least one of the properties will shortly ship ore. At the 100 foot level of the Reliance fine cop*per ore has been met with in the course* of driving towards other ore deposits shown by surface cuts to be on the contact. This property lies adjacent to the B. C. mine, from which copper ore to the value of more than $1,000,000 was mined by the owners, the B. C. Chartered Co., of Montreal. The ore found on the Reliance carries higher copper values than that on the B. C. which was the highest grade copper ore produced in large quantity by any Boundary mines. The Rathmullen Co. has also done considerable work on its Maple Leaf and Malta claims. The management look forward to having a busy year in 1906.

COLLIERIES OF ISLAND

Production of Past Year Curtailed Owing to Labor Troubles

Growing Demand for Coal Makes Outlook for 1906 Bright

Nearly 25,000,000 short tons is the aggregate production of coal in British Columbia to date, and of this quantity Vancouver Island collieries have produced nearly seven-eighths; the output of the Crow's Nest Pass Coal company's collieries during the seven years they have ben producing, having totalled about 3,400,000 tons. The steady increase in the output capacity of the latter, while it may eventually lessen the disproportion between their aggregate production and that of the Vancou*ver Island collieries, will hardly interfere* with coal mining operations on the Island, since the markets of the companies, respectively, are entirely different ones, the Crow's Nest coal finding a largely increased consumption in eastern Washington, Idaho, Montana and neighboring states, while that from Vancouver Island will continue to be consumed along the Pacific coast, from southeastern Alaska to California.

Labor difficulties between the Western Fuel company of San Francisco, owning the collieries at and near Nanaimo, long known as those of the New Vancouver Coal company, and its miners, resulted in the suspension of coal mining in this company's mines for seven months in 1905, consequently the Island production was *smaller than for several years. The Wel*lington Colliery company, on the contrary, increased its output by about 27,000 tons over that of 1904, its Wellington (Extension) mines having produced about 333,000 tons and its Comox (Cumberland) mines about 340,000, a total of 673,000 tons. This company had a fairly brisk demand for its coal and a consequent moderately good season. Its chief market is San Francisco. The Puget Sound trade is not easily obtainable, outside interests influencing this in favor of Washington collieries, having railroad connection with the Sound. Some of the Alaskan towns and mines get most of their coal from Vancouver island, and the Wellington company finds consumers for its coal at the Treadwell company's mines on Douglas island, Skagway, Juneau, Nome and other northern points.

The purchase of the Esquimalt & Nanaimo railway by the Canadian Pacific railway company, led the Wellington Colliery company to hasten the completion of the "short line" it had previously been preparing to construct, so as to do away with the necessity otherwise existing for running its coal trains over about 10 miles of *the E. & N. railway. The new coal rail*way gives the Wellington mines at Extension direct railway connection with their shipping port—Ladysmith—where the company has large bunkers, a coal washer, and ample facilities for loading vessels expeditiously. The provision made at Ladysmith for shipping purposes is more than adequate for even a considerably larger trade than has yet been done. The outlook for 1906 is decidedly favorable, the demand for coal being good and the prospects of increased consumption satisfactory.

Particulars of the year's operations at the Extension mines have not been received, but it is known that more men have been employed latterly than in the first half of the year and that a gradual *increase in numbers is being made as new* places are opened in the mines for them to work at. Along the short line prospecting has been carried on at two points at which the company plans to open mines, but it will be some time, probably well into 1906, before development will have been sufficiently advanced to allow of much coal being shipped from these new mines.

Through the courtesy of Mr. John Matthews, M.E., the following information relative to the Wellington Colliery company's mines at Cumberland has been obtained:

COMOX COLLIERIES, CUMBERLAND

Cumberland, the centre of this mining district, and at which the local offices of the Wellington Colliery company are lo*cated, has enjoyed a year of* unbroken prosperity. There have been an average of between 800 and 900 men employed in and about the mines during the year, and the number is being increased as the mines are further developed.

There are four mines being operated, viz., No. 4 Slope, No. 5 Pit (shaft), No. 6 Pit (shaft), No. 7 slope.

NO. 4 SLOPE—No. 4 Slope, or what is locally known as the Lake mine, owing to its situation, which is on the shore of the beautiful Comox lake, a body of water unsurpassed in beauty and attractiveness, which has a length of 11 miles and averages in width from one to two miles. The lake presents a beautiful aspect with its banks stepping up in terraces of bare and wooded ridges, until they attain the dig*nity of mountains of 4000 to 5000 feet ele*vation, capped by the grand and imposing glacier at the head of the lake. These ridges are ideal hunting grounds, deer being plentiful, with little underbrush to impede the movements or obscure the view of the hunter. Bears are also quite numerous in the vicinity of the adjacent streams and swamps. No body of water on Vancouver island affords better trout fishing than this lake and its outflowing streams.

No. 4 mine is an extensive one, producing an average daily output of about 1000 tons, which will be increased in the near future. The various levels and drifts have been energetically pushed during the year, and development has proved a body of good coal in every direction. The mine has a bright future, and from present indications, a long life before it. This is the mine that has built Cumberland up to its present prosperous condition, and, from which most of the famous Comox steam and coke-producing coal has been mined. The mine is well equipped mechanically, having a pair of powerful hauling engines, also an electric plant, con*sisting of three generators of 70, 80 and* 100 h.p. respectively. They are continuous current 250 volt machines. The electric power developed is used for the purpose of lighting the extensive surface works, and the interior of the mine, and to operate the large electric pumps of which there are eight, to pump the water from the mine, a work of considerable magnitude, owing to the long distances, nearly a mile and a half in some instances.

There has been considerable surface work done at this mine during the year. A big brick building, used as blacksmith and machine shops, has been erected and a large addition has been made to the mule stable. There are 70 mules used in the mine hauling coal, their work being in addition to the mechanical rope haulage system.

NO. 5 PIT—Much work has been done during 1905 in No. 5 Pit (shaft) lower seam, which is found at a depth of 600 feet, but owing to the great number of faults and wants encountered, the results have not been as satisfactory as could be desired.

A pair of slopes, which are being driven *in a N.E. direction, have "struck" the* coal. These slopes have ben in a fault or want during the year; they now, however, give much promise for the future.

The work of developing an upper seam, which is found at a depth of 250 feet from the surface in this pit, was begun a few months ago, and a seam of good coal, averaging about 5 feet in thickness, has been developed, which enhances considerably the prospects of this mine.

NO. 6 PIT—No. 6 Pit has improved greatly during the year. The upper seam, referred to above, has been more extensively developed in this mine. The south levels have been driven in this seam for a distance of about 1200 feet, th coal averaging from 4 1-2 to 5 feet in thickness and being of good quality.

Coal mining machines have just been introduced in this mine and a Rand air compressor plant, to furnish power for their operation, has been recently installed. These machines are giving complete satisfaction.

NO. 7 SLOPE—No. 7 Slope is about five miles from Cumberland in a northwesterly direction, and the workmen are run *to and from the city on a special train.* There has been much development work done here during the year both in surface improvement and in the interior of the mine. The main slopes have, however, been in a fault for the past few months. It is satisfactory though to be able to state that it is only a roll or want the slopes are passing through, as the continuation of the seam is proved by diamond drill holes, which have been recently bored ahead of the slopes, these proving the occurrence of a working seam of very good coal. This mine is noted for the superior quality of its coal. It is from it the anthracite coal is mined, for which the demand at present exceeds the supply. The writer feels safe in predicting that No. 7 Slope will in a few years, be one of the greatest coal producing mines on the Island.

The Cumberland & Union Electric Light company, whose plant is located in the town has shown commendable enterprise, having installed a Pelton water wheel as an adjunct to its steam engine for driving the generators, of which there are two, each of 100 horse power, but it is not yet *in a position to met the increasing demand* for light. However, it contemplates introducing great improvements before next winter and hopes to be in a position to supply all demands by that time.

Relations between the Wellington Colliery company and its employees are most amicable. The mines are being steadily improved, and the promise for the incoming year is of a very encouraging nature. Cumberland can, therefore, with every hope of realization, look forward to an era of expansion and consequent prosperity.

WESTERN FUEL CO., NANAIMO

The Western Fuel company last year erected new surface works and installed new machinery at its Nanaimo colliery (No 1 shaft, Esplanade) to replace those destroyed by fire earlier in the year. It also undertook the installation of a plant at Brechin, to operate the new workings which had been in hand for some time previously, these being in connection with the opening up of coal seams passing under the water from the Departure bay neighborhood to an adjacent island.

The new machinery, part of which was installed during 1905, included two Canadian Rand Drill company's 500 h.p. compound steam, compound Corliss air compressors, these to supply air for various coal mining machines, pumps, etc., in the pits of these collieries.

The company's output of coal in 1905 was probably not more than 100,000 tons, the average production having been, during the three or four months the collieries were in operation early in the year, up to time of the miners' strike, estimated at at about 20,000 tons per month. Work was resumed late in the year, but owing to the mines having been closed down for about seven months, there was much clearing up to be done in readiness for a resumption of production at the end of the year.

A considerable portion of the company's mines have been worked out, or rather, the coal seams have been worked for a comparatively long distance under the sea and much of the production during the last year or two has been from the breaking down of pillars left when the workings were being advanced. There are two seams—the upper seam being known as the Douglas seam and the lower, the Newcastle—that have been productive over a long series of years. These are now being developed from a new point, from Brechin, which is near Departure bay. The Douglas seam is too near the water to admit of its being worked from the shore, but it is entered from the tunnels on the lower seam and will, no doubt, when *fully opened, contributed largely to the out* put the company will maintain. Practically all the coal mined in these collieries finds a market in San Francisco. The company has declined to supply for publication any information concerning its operations.

SHORT COURSE FOR MINERS

*School of Mines, University of Wash*ington

The School of Mines of the State University of Washington gives a course each winter for prospectors and mining men in general. It is the aim of the institution to make this course thoroughly practical. To that end, the instruction is principally by laboratory methods and visits to smelters and mines in operation. The course begins January 9th and lasts three months.

Ores are tested in the new stamp mill and concentrating plant recently built at the university. The machinery for free milling ores consists of a Dodge breaker, grizzley, Challenge feeder, three stamp mill, copper plates, mercury trap, *Frue vanner, canvas table and Willley slimer.* For concentrating copper and lead ores, the following are used: Breaker, roll feeder, Cornish rolls, revolving screen, three compartment jig, Overstrom diagonal table and revolving slime table, hydraulic classifier and Pinder concentrator. The mill building also contains drafting rooms, down draft forges and a two ton cupola furnace for foundry work. Students are given practice with all the above machinery.

The assaying and chemical laboratories of the university have been renovated and enlarged during the past summer, giving every facility for work.

The location of the university gives exceptional advantages in the way of studying mining, milling and smelting methods at the places where these operations are *being carried on. Visits for the purpose of* study are made to the smelters at Everett and Tacoma and to the United States assay office at Seattle.

For the study of coal formations, coal mining, electric trams and hoists, the large mines at Renton, Newcastle, Carbonado, Fairfax, etc., are easily reached and permission for full inspection is granted to university classes. Index, Silverton, Monte Cristo and other nearby districts afford excellent opportunity to study ore deposits and methods of concentration.

The expenses of the mining course are limited to the cost of text books, fees in the laboratory courses, and deposits to cover materials used. At the end of the course, the deposit is returned to each student after deducting the cost of supplies used by him. In subject 1, the fee is $3, deposit, $2; subject 2, fee, $10, deposit, $5; subject 3, fee $5 deposit, $5; admission to classes is without examination. The library, dormitory, gymnasium and other accessories of the university, as well as the general lecture courses, are open to the special mining students.

SUBJECTS

1. Mineralogy—Instructions and practice in blow pipe analysis, followed by lectures upon the common minerals, with practice in the identification of minerals by fire tests.

2. Fire Assaying—Lectures on sampling, preparing ores for assay, fuels, furnaces and reagents. Practice in assaying lead, silver and gold ores.

3. General Chemistry and Qualitative analysis—Laboratory practice in the determination of the common elements.

4. Geology—Lectures on the elements of geology, the common varieties of rocks, metalliferous vein and ore deposits.

4. Mining, Milling and Smelting—Lectures on systems of mining, transportation, milling machinery and treatment of ores at smelters. Practical work in stamp mill, concentrating plant and drafting room. Visits to mines, mills and smelters.

6. Mining Law—Lectures by a prominent mining lawyer on the mining laws of the United States, British Columbia and Alaska.

Those who are proficient in the above subjects may continue their studies in any of the other university courses for which they are prepared. Correspondence should be addressed to The Registrar, University of Washington, Seattle, Washington.

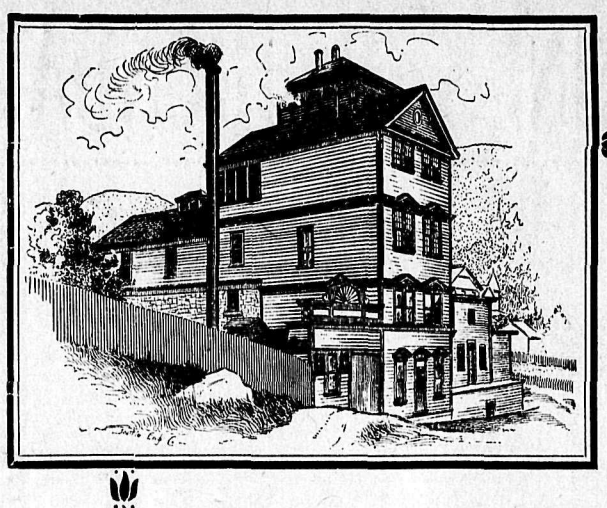
EXPERIMENTAL FARM WANTED

During the last few months nearly every newspaper in the Kootenays has advocated the establishment of an experimental farm *somewhere in Kootenay, and so far no* objection has been made to the suggestion that it be established in this valley, for the very good reason that no real objection of merit can be brought forward, as it does not exist, says the Wilmer Cartcrop. The climate and soil of the upper Columbia and upper Kootenay valleys are at least equal to any other that might be chosen, and as already private individuals have proved to some considerable extent the agricultural possibilities here, there can be no mistake made in pressing upon the authorities the advantages of establishing such a farm somewhere in this valley. Just here let us quote what Thomas Sharpe, who has charge of the dominion government experimental farm at Agassiz, said to the Outcrop when he was *here last June:*

"I think the agricultural resources of this valley compare favorably with the best in the province. I have never seen better fruit trees anywhere."

These statements of Mr. Sharpe are significant and should materially assist in securing for this valley the proposed experimental farm, whenever the dominion or provincial governments can be induced to consider this important matter.

The benefits to be derived from such a farm are many and so obvious that it is quite unnecessary to point them out; but in order to get these benefits our farmers must be first to move in the matter, and to do so they must organize and do it in a business way. The organization of an agricultural society has been suggested in these columns, and now its need is urgent and no time should be lost in its formation. In other portions of Kootenay such societies have been formed with good results and they are prepared to take up this matter in a proper form.



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10000 AMERICAN BOY	1 3-8
5000 CANADIAN GOLDFIELDS	4
2000 DIAMOND VALE COAL	quote
5000 INTERNATIONAL COAL	28
2000 ST. EUGENE	47
2000 WAR EAGLE	20
5000 WESTERN OIL AND COAL	quote
5000 YALE KOOTENAY ICE	8 1-2
2500 CENTRE STAR	quote
1000 RAMBLER	34
10000 CARIBOO (McKinney)	1 1-4
1000 JUMBO (Rossland)	36
5000 ORO DENORO	quote
20000 LARDEAU MINES	quote

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WE WILL SELL

5000 AMERICAN BOY	1 5-8
1000 INTERNATIONAL COAL	30
2000 WAR EAGLE	21
5000 YALE KOOTENAY ICE	9 1-4
2000 RAMBLER	35
2000 JUMBO (Rossland)	37
3000 ORO DENORO	Bid
1000 ROCKY MOUNTAIN OIL	90
1500 ST. EUGENE	Bid
5000 PANHANDLE SMELTER	12
1500 PRINCE	22
100 CARIBOO HYDRAULIC	Bid

ANNUAL MINING REVIEW

THE DAILY NEWS

SECTION NUMBER FOUR

VOL. 4 NELSON, B. C., MONDAY, JANUARY 1, 1906 NO. 214

MINES OF LARDEAU DISTRICT

Progress in the Lardeau district, while in instances satisfactory, has not on the whole come up to expectations at the beginning of the year.

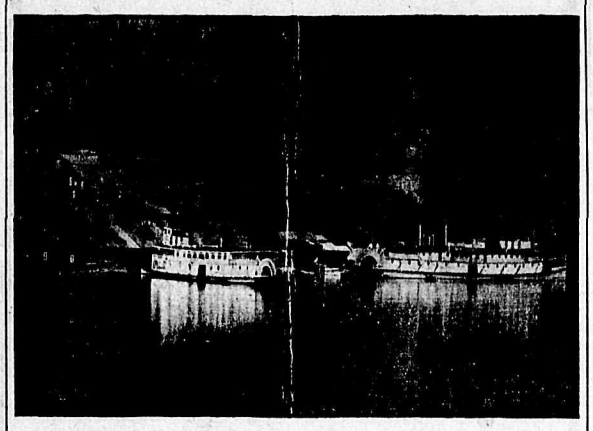
In the Camborne camp several properties have shown much improvement, these including the Eva, Mammoth, Beatrice and Silver Dollar. The Eva group, on Lexington mountain, has been developed under the direction of Mr. A. H. Gracey, and the excellent results he has obtained are indicated in the notes on that property which follow. The Mammoth group on Goat Mountain, is a property, the development of which a Rossland syndicate commenced last year, when two tunnels were started and some 700 sacks of ore containing good values in silver and about 75 per cent lead were taken out. Since then a company has been organized and work has been prosecuted with a fair measure of success. The Beatrice has had more capital furnished and has entered upon an era of active development, which promises to prove the property one of much value. The Silver Dollar, owned by an Indiana organization known as the Elwood Tinworkers Mining Co., has also made much preparation for permanent working.

Among other well-known properties, but which have not been so progressive are the Oyster-Criterion group and the Goldfinch-Camborne group, the former owned by the Great Northern Mines, Ltd., and the latter now in the hands of the Camborne Gold Mining Co., organized to take over the property from the Goldfinch Co., which was compelled to suspend work when, last year, its mine buildings, aerial tramway, etc., were destroyed by fire.

In Ferguson camp production was considerably less in 1905 than in several earlier years. While development at the Silver Cup, one of the mines owned by the Ferguson Mines, Ltd., a British organization that, on the voluntary liquidation of those companies, acquired the property and assets of the Silver Cup Mines., Ltd., and the Great Western Mines, Ltd., were so important as to practically give the mine a new lease of life, the conditions in regard to the same company's Nettie L. mine are unpromising, and consequently this mine has been unworked latterly. Development of the Triune was resumed as soon as communication with the mine, which is usually snowed up during several months of the year, was opened, but it is understood that results were not as satisfactory as were hoped for so far as the discovery of ore *in quantity at the lowest level went*. The company engaged in driving a long tunnel into Nettie L. Mountain at a low level made good progress with this work, and it expects to cut several veins of ore before the intended full distance shall be driven. Several properties in the neighborhood of Ferguson and long idle had some work done on them during the year, but much remains to be done ere they will become producers to an extent that will add appreciably to the total output of the camp.

About Trout Lake the Lucky Boy was worked for a while, but information from this section is scant, numbers of applications for data as to the year's work and results not having met with a response. Similarly claim owners in the Poplar creek part of the district failed to supply any particulars—with exception of Marquis & Gilbert—either from modesty in strong contrast to the eagerness for publicity displayed by some of their local optimists about two years ago, or from a lack of satisfactory results to chronicle. One enterprising company operating chiefly on the Duncan slope part of northeast Lardeau, and having its head office in the province at Trout Lake City supplied the particulars of its properties and operations given in their proper places below.

The geological and topographical examination of the northeast Lardeau upon which the Geological Survey Department of Canada entered two years ago, was not continued in 1905, political and other interested influences having secured the transference of Mr. R. W. Brock and his colleague from the practically unknown field above mentioned to that of Rossland, of which much had already become known and which could better have waited for the attention of the officials of the survey than could the Lardeau. And, too, as yet only a summary of the progress made in northeast Lardeau in this connection has been made public, the official responsible for the preparation of the promised more full report having, seemingly, put off its preparation indefinitely. Some particulars of individual mines in the several sections of the Lardeau are appended:



KOOTENAY ORE CO.'S ZINC SEPARATOR, KASLO, B. C.

CAMBORNE, FISH RIVER.

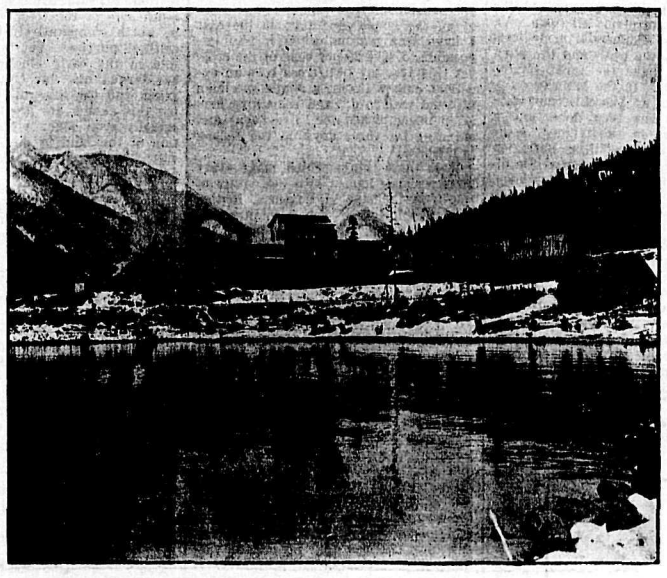
Eva Gold Mines, Ltd.—Operations at the Eva mine proceeded uninterruptedly throughout the year, the damage caused by the forest fire in August, 1904, having been fully repaired by January 10, 1905. From 20 to 25 men have been regularly employed at mine and mill. More than 1300 lineal feet of development, consisting of drifts, crosscuts, and raises, practically all in ore, were driven. This work proved the existence and the average value of very large bodies of ore a considerable portion of which can be mined cheaply by the "glory hole" system. Production in 1905 was approximately, 12,000 tons of ore, more than 25 per cent of which came from the development faces. Of this quantity 11,375 tons were milled at the company's 10-stamp mill at Camborne, and a recovery of gold valued at about $50,000 was made. The gross average value of all ore mined and milled was a few cents more than $5 per ton. The average costs per ton in connection with the year's work including development, were as under:

Mining and development	$2.80
Tramming (by aerial tramway)	.15
Milling	.62
Maintenance, etc.	.06
Management, general expenses, office, etc.	.22
	$3.85

As these average costs have been practicable on a 10-stamp basis, and hand-drilling, it can readily be understood that with a large plant and power drills (not yet in use at the Eva) a considerable reduction could be made. It is estimated that on a 40-stamp basis the total cost could be kept well under $2 per ton. This would be possible by reason of the favorable facilities possessed here, both for mining and milling, including free water power, and gravitation for ore transportation, a vertical depth of 800 feet being obtainable by tunneling from the present upper terminus of the aerial tramway, and a possible vertical depth of 1800 feet by a tunnel starting from the mill site and to be driven not to exceed 3800 feet to *reach the ore bodies*.

Mammoth—This property is owned by the Edward Baillie Syndicate, Ltd., of Rossland. In his report submitted to the annual meeting of shareholders held at the end of November, the manager especially called attention to the large expenditure necessary in carrying on operations on the company's Goat Mountain property (which, it may be mentioned is situated above timber line and, consequently in the region of deep snow for about half the year) under present conditions and without a tramway for transportation purposes. The report showed that the development work in progress was giving such satisfactory results as will probably justify the construction of a tramway in the near future. Buildings for housing and other necessary mine buildings have been erected and all requisite supplies and equipment provided, and it was intended to continue development throughout the winter. Such encouraging results from the winter's work are looked for that the manager expressed the hope that the shareholders will next summer be asked to sanction the construction of the much needed tramway and the enlargement of mining operations. The financial statement presented showed that the year's expenditure that totalled $15,758.13 and that 58 shares had been sold at par, realizing $5,800, while proceeds of ore shipped had brought in $4,594.47. The remaining 142 shares comprising the balance of the authorized stock in the company are held on treasury account. The second shipment of ore for the season was then in transit, and it was estimated that this would bring in about $1500. On the Mammoth group there are several veins running into the mountain. With the object of finding the large body believed to occur here, a tunnel has been started farther round the hillside than that on the Crescent. It is proposed that the new tunnel shall be the main working adit on the property.

Beatrice—Early in the year the Beatrice Mines, Ltd., made preparations for operating on a larger scale than last year, including further development and equipment and an increase in production. Last winter about 10 tons of high-grade galena ore were hauled down from the mine. Later a contract was let for driving a crosscut a distance of about 250 feet starting at a point some 300 feet in from the portal of the tunnel. At 130 feet in the crosscut encountered a five foot lead, which was described as one of the small leads of the property. By the end of November this crosscut had been driven more than 300 feet, and it was then calculated that the lead would be met with about 50 feet farther in. The shoot of ore being driven for was 150 feet long and 4 or 5 feet wide in the No. 1 or upper tunnel, and runs about $75 per ton. It is intended when this ore body shall be entered to raise in it through to No. 1 tunnel, 150 feet above. An aerial tramway 3500 feet in length has been constructed for the purpose of conveying lumber and supplies to the mine, which is above timber line. This tram consists of a single cable on which a carrier is hauled by horse power.

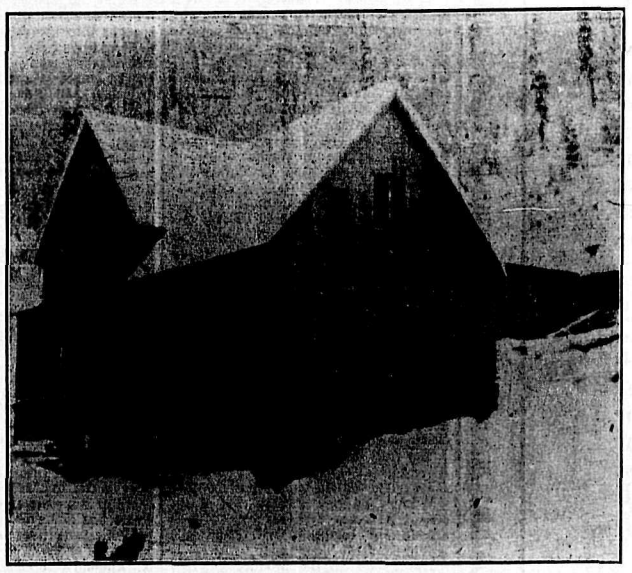


MONITOR CONCENTRATOR, ROSEBERY, B. C.

Silver Dollar.—The Elwood Tinworkers Gold Mining Co., of Elwood, Indiana, is erecting a stamp mill for the Silver Dollar mine. The building is completed and part of the machinery has been taken up, the rest being on the way. An air compressor has also been sent up and pipe for conveying air to the mine obtained. New cabins, blacksmith shop, and shed for air receiver have been built. A crosscut tunnel, driven some time since, reached the lead at about 240 feet from the portal and at a depth of 150 feet. The ore body is large, the crosscut having been driven in ore 35 feet without reaching the footwall. The ore is quartz with bunches of galena and iron pyrites occurring in it; and is of an estimated average value of $5 per ton.

Goldfinch; Camborne Group.—This property has been acquired by the Camborne Mining Co., which is practically the Goldfinch Mining Co., reorganized on an assessable basis. It is stated that sufficient money has been already obtained from stock assessments to pay off the debts of the Goldfinch and to leave a balance in the treasury. The management hopes to shortly increase the amount in hand, so as to provide for resuming operations next spring. It will be necessary to first replace the mine buildings and aerial tramway that were destroyed by fire in 1904, after which underground development will be undertaken. It is believed that it will be possible to follow the example of the Eva, viz., to obtain by means of the company's small stamp mill sufficient returns to pay for development and prove the property, after which, if results shall warrant its being done a larger mill can be put in

Very little work was done on the Oyster-Criterion group last season but it is stated that the Great Northern Mines, Ltd., announce their intention to raise funds early this year to extensively develop the property in order to justify the installation of a larger number of stamps being added to the present 10-stamp mill, so that mining can be carried on on a paying basis.



LA PLATA CONCENTRATOR—KOKANEE CREEK.

FERGUSON CAMP.

Ferguson Mines, Ltd.—The present policy of this company, which has appointed Mr. George Alexander, of Kaslo, general manager, is to carry out a general scheme of development work on a large scale, including the running of a deep tunnel, 750 feet below the Silver Cup upper workings, by means of which the property can be thoroughly exploited at depth. Some 2000 feet of this tunnel have already been driven and a raise has been made through to the next level, between 300 and 400 feet above. This work has been attended by satisfactory results, high grade ore—running more than 200 ozs. silver, 0.5 oz. gold, and a heavy percentage of lead—having been encountered in bodies apparently of large size throughout this development, which goes far to prove the permanency of the ore bodies at depth. The company plans to thoroughly and systematically develop this property, to which end a number of changes and additions have been made, including the substitution of water power for steam for driving the compressor plant. The various Silver Cup workings are connected with the company's reduction plant at Five Mile by 5 3-4 miles of aerial tramway, and all necessary machiery is installed for the economical prosecution of work on a large scale. Meanwhile the shipment of ore has been stopped for a short time.

Other Properties.—No particulars have been received concerning the season's work at the Triune mine. The Metropolitan Co. recently paid the final instalment of the purchase money on this property. It has also acquired by purchase the 250,000 shares of stock that were owned by Ferguson Bros., from whom the Triune was bought.

An undertaking that has drawn much attention in Ferguson camp is the driving of a long tunnel into Nettie L. mountain by the Long Tunnel Co., the expectation being that it will cut several bodies of ore at considerable depth. An air compressor was obtained for use in connection with this work, which has been vigorously prosecuted. The Broadview group, which had been idle for several years passed into the possession of a syndicate during the year, and work has since been in progress on the property, which is producing ore at the rate of between 100 and 200 tons per month.

ON THE DUNCAN SLOPE

The Consolidated Mining & Smelting Co., of Trout Lake, in which several Minneapolis capitalists are chiefly interested, has acquired some well-known properties in northeastern Lardeau, including the Old Gold, Primrose, and Treadwell groups, on what is known as the Duncan slope, to the northeast of Ferguson, and the Mountain Lion property, near Trout Lake.

Mining has not commenced on these properties, owing to lack of transportation facilities, but in 1904 a small shipment of ore was made to the smelter for test purposes—about 10 tons—from which a return of $85 per ton was received. The principal work done is on the Old Gold. The first crosscut driven reached the ore body at a depth below the surface of 75 feet. The vein was here found to be two feet wide and carrying satisfactory values. Another tunnel started lower down the hill cut the same lead at 250 feet depth, and at 50 feet farther in entered a second lead—a blind lead, the existence of which was *not indicated by surface showings*. This lead is eight feet in width, two feet being solid ore and the remainder concentrating material. When this tunnel shall be extended it will, it is expected, cut at a depth of 300 feet a lead that has the largest surface showing on the property. The development already done proves that the leads go down, and encourages the belief that the Old Gold is a mine with a prosperous future.

ENTRANCE TO OLD GOLD TUNNEL—TROUT LAKE DISTRICT

Assurance has been received that early next year a wagon road will be constructed from Ferguson to Circle City, a distance of 7 miles, and it is expected that after transportation shall have been provided a concentrator will be erected and ore be treated at a cost that will leave a good margin of profit.

TROUT LAKE

The best known property in the neighborhood of Trout Lake is the Lucky Boy owned by the Chesnut Hill Mining Co., of Philadelphia. Exploration has been continued and steady production on a small scale maintained. Ore is being rawhided to Trout Lake City, where it is stored to await the re-opening of navigation.

Lake View Group—Situate on Galena pass on, which considerable work has been done in 1901 and 1902, showing up some fine galena ore will be reworked in 1906, and the ground thoroughly exploited. The property is owned by the Trout Lake Syndicate of Rossland.

POPLAR CREEK.

The Laclede Mining Co., Ltd., has taken over the Mother Lode property at Poplar. This company was organized in 1905 by moneyed men of Laclede, Idaho. No particulars of work done have been received, but it is known that prospecting work was carried on for some time during the year.

Marquis and Gilbert did about 140 feet of crosscutting and drifting on their Gold Park property in 1905. No ore was taken out except that encountered in crosscutting the veins. Lack of funds prevented more development being done, but the owners are well satisfied with the results *they have obtained* thus far. The ore is free milling. In one tunnel, at a depth of 100 feet a lead 20 feet in width was crosscut; it was well mineralized with arsenical iron, carrying gold values running $6 to $8 per ton.

Apart from a little surface prospecting no work has been done during the past year on the well known Swede group. Litigation and want of funds have been the causes of the property remaining idle. The litigation has been settled and the Great Northern Mines, Ltd., which owns the property announce that work will be recommenced in the coming spring and a thorough mill test will be made. The same company owns the Lucky Jack group which has been idle during the past year for the same causes affecting the Swede group. No definite announcement has been made about resuming work on the Lucky Jack as the year closes.

The Mother Lode No. 2 on Poplar creek, has been bonded to a Spokane syndicate, who state that active development will be commenced in the spring The Copper King group on the same creek had only assessment work done on it last season but the owners announce that extensive development plans are being matured for the coming year.

The Spyglass Group.—Great disappointment was experienced in the district that work was not resumed on this property during the past season on account of the bad condition of the trail which made transportation charges so excessive that work could not be carried on successfully. The company declare that they will construct a wagon road in 1906 and resume operations.

MISCELLANEOUS

Surprise Group—On Surprise creek the property owned by Dave Morgan, of Ferguson, and alderman Foote of Revelstoke, was thoroughly examined by O. V. Grandin, one of the leading experts of the continent, on behalf of *eastern capitalists*. His report was eminently satisfactory, and early in the spring work will be resumed on a large scale. The proposition is a low grade one and will require the installation of reduction works on the ground and the extension of the wagon road from Ferguson. This the new company are prepared to do.

Baltimore—This is one of a group of a eight claims on the wagon road and within a mile of Ferguson. The Baltimore tunnel was extended 40 to 50 feet and a fine body of concentrating ore shown up. The near proximity to transportation and excellence of situation makes this a most desirable property.

Mohican.—Up Gainer creek the Mohican syndicate are engaged in driving a long tunnel to tap the lead at a 300 foot depth. Although only a very small capitalized company composed of men of small means they are showing the spirit of "stick-to-it-iveness" which invariably results in success.

Noble Five.—On Brown creek opposite the I.X.L., a magnificent showing of ore was exposed by the locators of the Noble Five group late in the season. Trails were built and about ten tons of ore extracted before snow fell and stopped operations. They will be resumed early in the spring. The paystreak is from 12 to 18 inches in width and carries high values. Six men were employed while operations lasted. J. O. Piper opened up a nice vein of carbonates on the Alice fraction carrying high gold values.

Slinger Group.—On the 8-Mile summit Steve Slinger and partners did a lot of development on their properties adjoining the Winslow, which resulted in the determining of the continuance of the Winslow lead through their adjoining properties.

Silver Plate—A. W. Edge and Andy Daney succeeded in opening up the lead on the Silver Plate, six feet in width of quartz, highly mineralized.

Bonanza and Linson View—P. A. Lindgren and associates were busy all summer on the Bonanza on Haskin's creek and Linson View on Canyon creek. Both of these properties are showing up well. From the latter a good sized shipment is sacked ready for the smelter.

Broadview—Late in October a synidicate of Trout Lakers secured control of the Broadview on Great Northern hill from the Horne-Payne Co. for $10,000. A force of seven men were put on, trails opened, cabins put in shape, old workings cleaned out and at this date over 100 tons of ore taken out and sacked. Before the synidcate had time to know what they really had an offer of $20,000 was made them, and a new deal is now pending whereby a syndicate of the strong mining men of B. C. will take control. If this deal is completed and development proves satisfactory, the hill will be worked on a large scale, and a tramway put in to lay the ore down at the lake.

Placer—On Lardeau creek, at Trout Lake City, the Spokane Falls Placer Co. have put in about 1000 feet of flume, and the only clean up made prior to frost, amounted to $150 for two men shoveling for two days.

Free Coinage—A. J. Gordon is working a crew of men on the Free Coinage, which he has under a lease and bond. He is meeting with good success and by next summer will undoubtedly be on the shipping list.

FRUIT GROWING INDUSTRY OF SOUTHERN BRITISH COLUMBIA

All Choice Fruits of Temperate Zone Can be Cultivated With Absolute Success--Exceptionally Favorable Conditions Attend Operations of Kootenay and Boundary Orchardists--Facts and Figures That Tell of the Growth of the Industry and That Demonstrate Its Enormous Potentialities

(Written for The Daily News by Martin Burrell, of Grand Forks.)

Back in the early nineties those of us who were engaged in fruit-growing in Ontario used to hear tall stories of what was being done in a horticultural way in the far-distant province of British Columbia, stories which were taken with the customary grain of salt, until we saw the actual product of the orchard brought east for the convincing of the unbeliever. It was largely coast fruit which we saw at that time, and it was not until about 1898 when the still taller stores of the inland fruit began to arrive that one got uneasy, and thought that a land where five-year old apple trees could yield a full crop of clean magnificent-colored fruit must be worth going to see. This was about the time that the great orchard of lord Aberdeen at Vernon was commencing to bear, but, accompanying the tales of wonderful production, came hints that markets were doubtful, and prices no good. How this has all been changed during the past two or three years we all know. It was customary to lump the inland districts together and refer to them as "the interior," a huge, half-explored country which might, and might not, be worth anything from the horticultural point of view. This same "interior" has shown that, in spite of some drawbacks, it can produce a class of fruit which for cleanness and quality can excel the coast grown product, and every year we are seeing some fresh inland district reveal its possibilities as a fruit country.

The opening up of the Kootenay mining country gave a stimulus to fruit raising some years ago, and when, more recently, the true value of the great market on the prairies began to reveal itself, and proof had been abundantly shown that the climate and soil of southern British Columbia were ideally suited for the production of a first grade of apples, pears, plums, and so on, then a real sense of the economic importance of the fruit industry was roused, and we have witnessed an activity and expansion in horticultural matters which is amazing to those who have not studied these things. It is a movement which is only in its youth, and which is based on the soundest of foundations.

If any doubt existed as to the value of this industry they would be speedly dispelled by the frank and favorable criticism of expert testimony from the outside. At New Westminster professor Van Deman, the foremost pomological authority on the continent, pronounced the B. C. fruit the finest and cleanest collection he had ever judged. Prof. Lake, of Oregon, was convinced by his visit to Okanagan orchards that we had an unexcelled fruit country. Mr. McNeil, the chief of the fruit division at Ottawa, believes that we have it in our power to dominate and control the fruit market of the great northwest, and the final evidence comes in the shape of gold medals to British Columbia fruit and the silver medals for Kootenay fruit, in the face of all colonial competition in London, where they know the merits of a good apple when they see one.

The total yield of fruit in British Columbit in 1904 may be valued between $500.000 and $600.000. This year witnessed the shortest apple crop over the whole continent which has been known for a generation, but still the output of B. C. will probably be an increase in value of from 15 to 20 per cent over last year. The planting of the past two years has been phenomenal, more than half a million trees going out each year, and it is evident that 1906 and 1907 will witness a much more rapid planting still, for this year has marked the subdivision of various large estates with the express purpose of devoting the areas to commercial fruit culture.

While the interior of the province can show a tremendous area susceptible of successful production of many fruits, it is becoming more apparent that the southern portion of the interior is the special country where all the choice fruits of the temperate zone will be cultivated with absolute success. The district embracing Kootenay lake and south; along the lower Arrow lake; the Boundary country, the lower Okanagan, and the Similkameen, is the great horticultural district of the future. Large parts of this district will not only be capable of producing the finer and tender fruits, but will have the unspeakable advantage of doing so with an almost complete freedom from the disfiguring fungus diseases which are the bane of Ontario and of the coast. From Kelowna to the foot of the Okanagan lake the successful culture of the peach has been amply demonstrated. Still further south, in the Keremeos valley, not only has the Crawford peach been raised for years to perfection, but Black Hamburgh grapes have been raised in the open, and the fact speaks volumes. Of Kootenay, I need not speak here, though we in the Boundary are thoroughly aware of the enthusiasm and push which are causing the fruit growers to make such a conspicuous horticultural success. In the Kettle river valley we have an area of good fruit land which goes up into the thousands of acres. A present we have some 20-000 trees planted, about 75 per cent of which are apples. Five carloads of prunes were shipped to the prairie this season, and at a price which brought an excellent return. For other fruits we had a good local market, and, in fact, several carloads of apples have been brought in during the year. This season has seen peaches, grapes and the tender varieties of plums all ripen well, but on a large commercial scale it is with the apple, the pear, and the plum that we shall make the great success in Kettle valley. In the Midway country as far west as Anarchist mountain some planting has been done, and a movement towards subdividing some large tracts and installing irrigation systems is now on foot. Across the divide in the country between Penticton, at the foot of Okanagan lake, and the Boundary line the large Ellis estate of 40.000 acres is being cut up into small tracts for fruit purposes, and arrangements are being made for extensive planting next year. Further west in the Keremeos valley about 10.000 acres are adapted admirably for fruit, providing water can be supplied. About 80 acres of orchard in bearing exist now, and 100 acres of young trees have been recently planted. This year some 75 tons of fruit were raised which included a ton of grapes, and 12.000 lbs. of choice peaches raised by Mr. Frank Ritcher. The advent of railway transportation, now close at hand, will give the fruit industry throughout the whole Similkameen country a tremendous impetus.

I have referred to the exceptionally favorable conditions under which the orchardist in Southern British Columbia prosecutes his work, and can only repeat that no man who has had eastern horticultural experiences can fail to be struck with the immense advantages possessed by the grower here. Apart altogether from the absence of the most formidable of the insect pests—a priceless boon—we are fortunate in having climatic conditions which go to the production of a highly-colored, firm, and clean sample of fruit of excellent quality. In the east two classes of fruit, viz., the plums and the sweet cherries, were so subject to "rot" (monilia) that it was not uncommon for a grower to lose from 25 to 50 per cent of his crop of some varieties, even after careful and expensive spraying methods had been practiced. Here, on the other hand, the growers' profits are not diminished by anything of the sort. Take for example that fine large red plum, the Ponds' Seedling; in the east I have seen seasons when it was impossible to save 25 per cent of the crop, yet this year my own trees bore an excellent crop with not a single specimen affected with "rot," and remaining firm after being picked for five days and standing for three days on the Nelson fair tables.

It is these things which make every man who has looked into the nature of the fruit industry in Southern British Columbia feel that such a country will continually and successfully invite the attention of those who are seeking an ideal horticultural location, and will become at no distant date the banner fruit district of the dominion.

—MARTIN BURRELL.

IN THE NELSON DISTRICT

The Nelson fruit district originally included all the lake and river valley lands from the south end of Kootenay lake, round Creston, the Kaslo and Ainsworth districts, both shores of the west arm and of Kootenay river to its junction with the Columbia at Robson, and also the valley of Slocan lake and river. In the whole of that area the low lands on the lake and river shores are admirably adapted for the culture of strawberries, raspberries, gooseberries, currants, cherries, and of several varieties of apples pears and peaches.

Maxwell Smith of Vancouver, dominion fruit inspector for British Columbia, and Alberta, has several times said publicly that the fruit grown in the Nelson district is not excelled in quality by the product of any other district in Canada. Coupled with that statement has been the advice to Kootenay fruit growers to limit their efforts to varieties for which the soil and climate of the district have been proved suitable.

Many of the fruit farmers who took up land and planted trees were novices in the science of horticulture. But the activity of their organization, the Kootney Fruit Growers' Association, its frequent meetings for the discussion and exchange of opinion and experience, and the number of instructive lectures by experts whose visits were obtained by importuning the provincial department of agriculture, have been of incalculable benefit.

During the year lectures on various subjects connected with horticulture have been delivered in Nelson by T. G. Earle, of Lytton, W. J. Brandrith, of Ladmor, president and secretary respectively, of the provincial board of horticulture; H. Kipp of Chilliwack, Maxwell Smith and Thomas Cunningham, dominion and provincial fruit inspectors; major Shepherd, of the Ontario department; H. M. Logan, of Ottawa, and the deputy minister, J. R. Anderson.

During the year the association has doubled its membership which is now nearly 100, and the first month of 1906 will see its incorporation as a chartered company. It has already done much to improve the industry by teaching the best varieties for planting, methods of culture, and of packing and shipping, arts in which British Columbia growers are now conceded to excell those of any other part of Canada.

The fruit crop for the year was considerably more than double that of 1904. The anticipated output for 1906 will show an ever greater rate of increase, as many orchards, whose trees are in fine condition, will come into bearing for the first time.

Exact data on the product for 1905 are hard to get. No returns are made of fruit consumed at home or in the city. The Chinese growers who produce a large proportion keep no returns, and the only reliable figures are those of the members of the association.

T. Morley, secretary, supplies the following figures, which may be taken as approximately correct for the product of 1905, of the ranches on the shores of the west arm:

	Crates.
Strawberries	25,000
Gooseberries	100
Currants, etc.	300
	Boxes
Cherries (in 40-lb boxes)	300
Apples	1.000
Pears	250
Tomatoes	350
Plums	300
	Tons
Potatoes	100

The total value of the output is estimated between $60.000 and $70.000.

The Chinese fruit growers sold 4000 crates of strawberries, but no returns can be obtained of their other crops.

The extent and value of the local fruit market may be indicated by the fact that, although a large part of the product of the district was sold in the city, the value of fruit imported up to September 1st was $20.000.

Mr. Morley estimates that apple crop that will be available for shipment in 1906 at 5000 boxes, which takes no account of the possible product of ranches worked by Chinese, or of others who are not members of the association.

At the sitting in Nelson of the dominion tariff commissioners the fruit growers presented a strong case for the protection of Canadian fruit from the competition of inferior or diseased fruit from the United States. A statement made by Mr. Morley at the time, that the fruit grown in Kootenay was superior in quality to that grown in any other part of Canada, was received with amused incredulity as the expression of mere enthusiasm. Within the last month the proud boast has been amply vindicated by the award of the gold medal of the Royal Argicultural Society of England, to British Columbia in competition with all other colonies, and of the special district medal to Kootenay, which was represented by a hurried shipment of fruit available in Nelson at a day's notice.

The triumph has attracted a great deal of attention in many quarters and will undoubtedly draw many desirable settlers to the fruit lands of Kootenay.

IN THE KETTLE RIVER VALLEY

(Grand Forks News-Gazette)

The Kettle River valley contains a great variety of soils and sufficient experimenting have been done now to demonstrate its value as a horticultural section. Years ago the land on the south side of the river was thought to be worth comparatively little for agricultural purposes, but land which was sold in the early nineties for a song, has turned off fine crops of hay and grain, and the illustrations accompanying this sketch are proofs of what has actually been done. A considerable portion of the land in this portion of the valley has been sub-divided into small plots, and the movement is likely to go on as the number of those who wish to embark in fruit growing increases. From W. H. Covert's east along the foothills, where Vaughan, Coryell and the Newbys, and Hardy Bros., are located, lies a fine stretch of land portions of which are deeply underlaid with clay. To the east of the town there are practically only four ranches: The one originally located by McConnell, and which with additions now makes over 1300 acres; Carraher's which lies to the south of McConnell's; then M. Burrell's of 150 acres, on which is established the Riverside Nurseries, and R. R. Gilpin's large estate which recently passed into the hands of Mr. Hansen. The McConnell ranch has changed hands several times, and only this year negotiations have been on foot to subdivide the whole property for horticulture purposes.

Situated about 1700 feet above sea level the valley has an admirable climate, whether considered from the personal or horticultural point of view. Irrigation is practiced to some extent, and it is possible that a broad scheme of irrigation for the general use of the valley may be seriously considered in the future. But though there may be occassionally a season, like that of the past one, in which scantiness of rainfall makes a shortage of crops such as hay and grain which require a large supply of moisture, yet one year with another a system of persistent and thorough cultivation will ensure a good, and often, a prolific yield of various crops. I have in my possession now an apple (Cayuga Red Streak) which was grown on A. Truanweiser's ranch south of the river, absolutely without irrigation, and yet in so dry a season, weighing 22 ounces.

Prior to 1890 the first fruit trees were brought into the valley, W. H. Covert, S. R. Almond and R. R. Gilpin bringing in trees, many of which had to be packed on horseback from Marcus. Under such conditions were planted the first apple orchards of the new country, softening and harmonizing the landscape, and recalling many a tender memory of the old homes. "Noble common fruit; best friend of man, following him like his dog or his cow wherever he goes," says John Burroughs of the apple. "His homestead is not planted till you are planted, your roots intertwine with his, thriving best where he thrives best, suggestive of hardy cheerful industry and a healthy life in open air."

At the present there are probably about 20.000 fruit trees in the Kettle valley, a large portion of bearing age. W. H. Covert, not content with his first venture, planted out more trees including 1000 prune trees from which during the past few seasons about 50 tons of fruit have been gathered, and followed these efforts by planting in 1900 a hundred acres of mixed fruit the heaviest portion of which was apples. L. Vaughan, to the east of Covert's has an orchard of some ten acres in bearing from which fine crops of apples and excellent Bartlett pears have been produced. On the south of the river in addition to S. R. Almond's orchard, Cooper Bros., have a considerable acreage in orchard; A. Truanweiser has a well kept place with something like 2500 trees of various kinds; over 1000 trees including many cherries are in the adjoining property of E. Topp, and some 2000 young trees, chiefly apples, are growing on the place owned by Thos Powers. In the eastern end of the valley the chief orchard is that of Martin Burrell, who has about 1000 trees comprising a large number of varieties of various fruits, and who also has about 100 grape vines in cultivation. Here is situated the Riverside Nurseries from which many thousands of trees have been sent over the country during the past five years. This last season a portion of the McConnel ranch has been leased for nursery stock, and over 100.000 young trees have been grown there during the summer. A year from now it is the intention to double the quantity as constant demands for trees grown in Kettle valley come in from all over the interior of the province.

Owing to the coldness of the nights during August, this climate is not really adapted for the successful cultivation of the grape, and the same remark holds good with the late varieties of plums and pears. This district, however, is admirably suited to the production of a first class apple, and also to many varieties of pears, cherries, plums, and all kinds of berries. Peaches of a fine character were produced this year, and a few apricots. One of the important movements in the valley this year was the subdivision of the Covert estate of 360 acres, and the installation of an irrigation plant. Many of those who purchased came from Manitoba, some taking ten acre plots and others several plots of this size. The old homestead and orchard of 150 acres have also passed into the hands of J. D. Honsberger, who shipped five carloads of prunes this fall to the northwest, and who contemplates further planting in the near future.

The following are among some of the varieties of fruits which have been successfully produced in the valley:

Strawberries—Several kinds, the principal one grown being the Clark's Seedling.

Blackberries—Erie, Snyder, also the Lucretia dewberry.

Gooseberries and Currants—A number of the leading commercial sorts.

Raspberries—Chiefly Cuthbert.

Cherries—Royal Ann, Early Richmond.

Peaches—Triumph, St. John, Crowford.

Plums—Peach, Washington, Bradshaw, Yellow Egg, Pond's Seedling. This year the Riversides Nurseries four varieties of Japanese plums were fruited heavily.

Prunes—Chiefly the Italian.

Pears—Bartlett, Flemish Beauty, Clapp's Favorite, Beurre Clairgeau, Louise Bonne.

Apples—Duchess, Wealthy, Macintosh Red, Gravenstein, Jeffries, King, Spy, Greening, Rome Beauty, Grimes Golden, Maiden's Blush, Blue Pearmain, Chenango Strawberry, Stark, Jonathan, Wagner and many others.

Owing largely to the altitude the orchards of the district are wonderfully free from those fungous diseases which are the bane of moister and lower districts. Occasional symptoms of the apple scab are seen, but rusts, mildews, and the "rot" of the plum and cherry, are so slightly in evidence that the writer has not in an experience of six years found it necessary to spray for such things.

Insect pests of a serious kind are much scarcer than in other fruit countries. The only very troublesome one is the apple aphis. British Columbia generally is particularly cursed with the various forms of plant lice, and it needs careful attention and the application of timely washes to keep them in check. Some oyster shell bark louse has existed here but is now pretty well stamped out. First class pests like the San Jose scale, codling-moth and plum curculio are unknown in the valley, and long may they continue to be so.

The economic importance of the valley from a horticultural standpoint has not even yet been sufficiently recognized. We have, in common with other British Columbia points, the great and ever growing market of the northwest, and we have in addition, what few districts possess, an excellent local market, for with the rapid devolpment of the mining and smelting industries of the Boundary there goes necessarily a magnificent home market for a very large portion of the fruit which can be locally raised.

Some of the men who ventured into this beautiful but isolated valley, through which winds and twists the Kettle river in the days when the virgin soil knew not the plough, will yet live to see the land of their adoption a country of vast orchards whose products will fulfil that fine definition of fruit given by Downing, the father of American horticulture: "The most perfect union of the Useful and Beautiful the world has ever known."

IN THE SIMILKAMEEN

(From the Hedley Gazette.)

A feature that for the past year or two has done much for the Similkameen valley is the reclamation of the large area of first class land brought under cultivation by Frank Richter. The sight of those green alfalfa fields, the well kept orchard, the fields dotted over in the autumn days with cattle, and the numerous long stacks give evidence of great fertility, with the general air of neatness and prosperity that pervades all, has captivated many a visitor and sent him away in love with the district and all that belongs to it.

In the earlier days Mr. Richter's industry and thrift were confined to his lower ranch, in what is known as the Richter pass, and from Keremeos, E. Bullock-Webster's ranch across the river, R. L. Cawston, Mrs. Lowe, J. Coulthard, Mrs. Daly and others demonstrated in a smaller way what the soil would produce, but subordinated agriculture to the greater industry of stock raising as they were compelled to do owing to the lack of transportation which forbade the raising of any kind of stock except that which had four legs on which to walk to market.

It was Mr. Richter, however, who chose a most desirable spot for enfolding a more comprehensive scheme of agriculture than had hitherto been witnessed in the valley, and the broad acres fenced in, circled by the road and spread out as a full page, beautifully set display advertisement for the whole district, has done the country a world of good.

The purchase of the Coulthard estate and other properties will have a far reaching effect on the interests of Keremeos and the lower Similkameen.

A little over a year ago W. H. Armstrong purchased from Mr. Coulthard his extensive holdings with a view to subdividing. This is the oldest property in the valley, having belonged to the Hudson's Bay company, who once had a post there. Mr. Armstrong has taken hold of the matter with vigor and the year which is almost passed has already witnessed the shaping of his plans.

In the spring Mr. Elmhurst arrived from Manitoba with his wife and family to take charge. Mr. Elmhurst is an old contrac-

OLDEST REAL ESTATE AND INSURANCE BUSINESS IN NELSON

T. G. PROCTER

THE success of Nelson District in securing the First Prize for Apples against the whole world at the recent Fruit Exhibition in London, England, ensures a rise in the value of Fruit Lands in the near future. I have recently purchased a block of 240 acres on the West Arm of Kootenay Lake, opposite the townsite of Procter, the transfer point for the Crow's Nest Railway. This block contains some of the choicest ground in the neighborhood for fruit trees and strawberries. It will be subdivided in the spring into 10-acre lots and parcels can be secured at once. Also several other good Fruit Farms, near Nelson, as well as City Lots and Ranch properties for sale.

The Kootenay Valleys Company, Ltd., offer for sale several of the choicest Blocks of Lands in East Kootenay, in the valley of the Kootenay River, between the International Boundary and the headwaters of the Columbia River and along the branch line of the Great Northern Railway. These lands are admirably suited for mixed farming, cattle raising and fruit growing. Prospectuses and information furnished on application to

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tor and the manner in which he has tered upon and is carrying out impr ments bears evidence of a thorough understanding of the work. The whole te is to be furnished with water and ex tensive irrigation system is being perfe Already some three miles of ditches been made and about 1300 feet of pi Much work has been put on Kere creek in cleaning it out, building ds, etc. Something over 150 acres of new has been broken up and another 150 of sage brush and greasewood cut. ing the past year 3000 fruit trees planted and an order has been give 12,000 more to plant next year.

The capabilities of the district for growing may be judged from two cir stances. Mr. Elmhurst showed the W an apple tree from which 65 bush apples were taken this year. And a peach tree 18 years old in the Conrad garden which bore a nice crop this This tree had had little or no care much abuse, its pruning being left cattle which browsed off what thought was necessary. Now the peach tree in the Niagara peninsula said to be 12 years.

IN EAST KOOTENAY

From an admirable account of the and farm lands of East Kootenay, lished in the Cranbrook Herald Chri annual, the following instructive pa lars are gleaned:

The entire prairie to the north of brook, with the exception of the la cluded in the Smith and McDe ranches is open to location and c had from the government at $1 per At present this prairie is used mer a cattle range, where either in summ winter anyone may let out their without expense. Stock thrive w fully on it as the herbage is bunch which brings lean cattle to slaugh quality inside of five weeks in the s and summer season. St. Mary's pr between the mission and Marysville, immense plain stretching from the Mary's river away up north to the S umchuck country. Want of water f rigation is the only drawback to this To what extent this defect coul remedied by sinking tube wells ha yet been demonstrated on the St. M prairie as it is much higher than th Joseph prairie. On the latter, how water can be got anywhere over its face at a depth of from 12 to 14 Given water, this soil will yield cro the most astonishing quality when considers the apparent sterility of surroundings. The best general ide the aspect of the country around brook is given by describing it as open, rolling character with a sugge of old English park land imparted b timber. This latter is never so thick prevent locomotion with a truck horses, except when we get into the properly so called. It is over this rolling country that a considerable of the lumbering industry of the brook district is being done. The ber thrives best on good soil, and found it where, when the trees and st are removed, will be most flourishing and gardens. Then again almost the e valley of the Kootenay river from G to Tobacco Plains is open for set Speaking of Tobacco Plains reminds that it was here the Hudson's Bay pany of old time used to winter all horses, which were brought in from P as far off as Colville. This is a very ly valley, well sheltered from the and east by the mountains and ha a mean temperature during the gro months, say from May to September about 56.5 degrees and an average for year of about 43.5. This average is s ing, as cultivation advances, a marked dency to rise. The variation of the of temperature between Tobacco P and the upper part of the Kootenay va is, taken generally, very little. The the valley the bottom land lying clos the river level, are subject to sum frosts, which do not, however, affect bench land at a slightly higher eleva On these benches, which can in nearl cases be watered from the creeks flow into the river, fruit and general c thrive splendidly. The soil in the bot lands is black loam mixed with a ficiency of alluvial sands to render easily workable. At present this class land is mostly used for the growth timothy and red top clover. From W to Elko and from Elko to Tobacco Pl there is an amount of land open to l tion, both from the C.P.R., the gov ment and the Kootenay Valley Land C pany, which affords every variety of cla fication, though probably the best of consists of bottom land, which is at p enut covered with willow scrub. This presents but little difficulty in remo and when cleared the crops of timo may be relied upon to realize a high pr It is estimated that between Wasa Tobacco Plains there is easily room fo thousand settlers.

Concerning the productive powers of soils of this part of East Kootenay it be said that apples, pears, prunes, plu damsons, cherries, strawberries, ra berries, currants and gooseberries amon fruits bear very good crops indeed, peaches need not yet be looked on as element in this consideration as far this part of East Kootenay is concern At Creston, however, a locality which rapidly asserting itself as an ideal loca for fruit growing, the peach may be, time grown successfully. Creston has great advantage of being only at an a vation of 1750 feet above sea level, wh Cranbrook is 3000 for all practical purpos the actual altitude being 2975.

Oats, timothy, all varieties of clov with the possible exception of alfalfa, po toes, carrots, parsnips, cabbage and t nips may all be depended upon as s moneymakers. Wheat and barley are much grown. The former, sown as spr wheat has done remarkably well on C. Smith's ranch on St. Mary's prairie. Flowers of all kinds which thrive in open air in England will do more than w in East Kootenay. As a rough and rea means of forming a conclusion as to climate, taken as a whole, this statem is as good a guide as can readily be su gested. Comparing the climate of Ea Kootenay with that of England, it see as if we out here get those ideal winte and more than ideal summers which grandfathers are so fond of telling abo as being the regular order of nature their day and time in the old country.

Of very little use would all these thi be if there was not a nearby and profita market wherein they could be readily so Cranbrook affords that market, being railway centre of the district and great distributing point for an area bou de on the east by Elko, on the west Sirdar, north by Wasa and the count around there, and south by the 49th pa allel. Over all this district are scatte sawmills, small towns, logging camp coal and quartz mines, which in the gregate require an enormous quantity all kinds of provisions, and provisions, t of the very best and soundest sort, the upkeep of their men and general pop lation. New sawmills are going in, pre ent ones are being extended, mines are full operation, and immigrants are comi in every day to swell the demand.

There are fully 1200 or 1500 tons of timot and an equal amount of upland hay d posed of in the Cranbrook yearly; wh the sale of oats will run well above 1000 ton mark. This, it must be borne mind, goes mostly to the retail trad since the lumber and mining compani under ordinary conditions, buy their re in wholesale lots from those who can su pply them, and do not resort to the r tailers except when there is an artific shortage between shipments from Alber and the Northwest. How timothy pa for the growing may be inferred from t fact that C. G. Powneell of Fenwick ranch, near Fort Steele, sold 200 tons his this year's crop at $30 a ton, delivere to a logging camp up near Wasa. usual price from retailers for timot may be put at $20 a ton the year aroun and for upland hay $16, though in t spring prices are usually very much abo these figures, and very seldom below the Oats sell at $30 a ton the years aroun

There is plenty of vacant land and first class market, calling for juwen times as much as the immediate distr can at present supply.

INTERIOR LUMBER INDUSTRY

The lumbering industry of the interior of British Columbia has made very rapid progress since its inception a very few years ago. It is already the second industry of the Kootenay and seems likely to expand in the immediate future at least as rapidly as fruit growing and general agriculture.

Lumbering in Kootenay will undoubtedly be a source of great profit not only to those engaged in it as operators, but also to the agricultural populations of the new prairie provinces of Alberta and Saskatchewan. The demand for horses in lumber camps is considerable and creates naturally a demand for hay and oats. Supplies of flour, vegetables and meat are also obtained from Alberta.

Indirectly the interior provinces are bound to reap a further advantage. Farmers in Alberta and Saskatchewan, like those in Ontario and Quebec, have four months of winter at least, in which agricultural operations are precluded. Unlike those of the eastern provinces they have no timber on their own properties to afford them winter employment. They will, therefore, in all probability, the younger men at least, seek occupation for their months of enforced idleness in the logging camps of Kootenay.

As these conditions become general and their advantages mutually recognized, it is expected that the people of the Northwest will cooperate heartily with their neighbors across the Rocky mountain divide in every measure calculated to promote the growth and prosperity of the lumbering industry of the Pacific province, especially in the interior.

Four years ago the millmen of Kootenay organized themselves as the Mountain Lumbermen's association, to take steps for their collective benefit. The association meets monthly, usually in Nelson.

At the annual meeting in September, 1905, which was held at Revelstoke, a further step in organization was taken when it was decided to establish a central office in Nelson and engage a permanent secretary. The resolve was carried out at once and G. P. Wells was engaged.

In connection with the organization a manufacturing association has been formed. Its plans have not yet become definite enough for public announcement, but it is undoubtedly intended to begin active manufacturing operations during 1906.

To those not acquainted with the business and to most nonresidents of the province, British Columbia timber is always thought of in connection with the large trees and mammoth mills situated in the coast district, and it comes as a surprise to them when told that the interior mills furnish by far the largest part of the lumber cut in the province.

Ten years ago the interior mills could be counted upon a few fingers and their output was small. With the rapid growth of the territories in the last few years, the consequent demand for lumber has led many investors to look in this direction and some of the best equipped and most efficient plants in Canada have been built within the last three years, and several more will be added at an early date.

The sites of the different mills are widely distributed and therefore the timber is of much greater variety than the coast timber, consisting of fir, cedar, pine (both yellow and white), hemlock, larch or tamarack, and spruce.

At present there are in operation about 45 mills, with a combined output of about 280,000,000 feet annually, and they represent an investment of nearly $10,000,000. They pay out for wages and supplies some $2,500,000 annually.

The interior mills look almost entirely to the prairies for their market and have suffered severely in the last year or two through American lumber being brought into this country, affecting them particularly, inasmuch as the greater part of the mountain cut is of common grades, the quality for which American coast mills had a poor market and an immense accumulation. The outlook for a large demand is good for the coming season and the mills are all preparing for it by taking out extra large cuts of logs this winter. Prices are by no means high and with the timber being harder to reach every year, and wages and supplies at the very top notch, it is only reasonable to expect lumber to be at least $2 or $3 per thousand higher before long.

The following is a list of the most important mills:

Kamloops Lumber Co., Kamloops and Enderby.
Bowman Lumber Co., Revelstoke and Comaplix.
Revelstoke Lumber Co., Revelstoke.
Arrowhead Lumber Co., Arrowhead.
Big Bend Lumber Co., Arrowhead.
Columbia River Lumber Co., Golden, Beaver, Kualt and Carlin.
Palliser Lumber Co., Palliser and Ottertail.
Eau Claire Lumber Co., Calgary.
Yale-Columbia Lumber Co., Nakusp, Cascade, Nelson and Westley.
Munday Lumber Co., Three Valley.
China Creek Lumber Co., Rossland.
Winlaw Lumber Co., Winlaw.
W. Koch, Nelson.
Kettle River Lumber Co., Grand Forks.
Robinson-Mackenzie Lumber Co., Cranbrook.
Fernie Lumber Co., Fernie.
Crow's Nest Pass Lumber Co., Wardner.
Ross Bros. & Co., Elkmouth.
Wattsburg Lumber Co., Wattsburg.
North Star Lumber Co., Elko and Cranbrook.
King Lumber Mills, Cranbrook and Yahk.
East Kootenay Lumber Co., Cranbrook.
Jaffray and Ryan.
Standard Lumber Co., Baker.
Mayook Lumber Co., Mayook.
Otis Staples Lumber Co., Bayard.
Porto Rico Lumber Co., Ymir.
M. McInnes, Elkmouth.
Elk Lumber Co., Fernie.
Crothers Lumber Co., Cranbrook.
Kimberley Lumber Co., Kimberley.
Adolph Lumber Co., Cranbrook.
P. McLaren, Blairmore.
Forrester Lumber Co., Hosmer.

LUMBERING IN EAST KOOTENAY

The following data gathered from the Christmas annual issued by the Cranbrook Herald will give some idea of the extent and importance of the lumbering industry in East Kootenay.

Crother's mill has 6400 acres of limits, employs an average of 40 men, pays $2000 a month, cut 4,000,000 feet during the year and will cut about the same in the next year.

The Crow's Nest Pass Lumber company owns and operates an acreage of 70,000 along the Kootenay river and its tributaries, employs 200 men, pays $12,000 a month, cut about 12,000,000 feet in 1905, and expects to cut 15,000,000 feet in 1906.

The East Kootenay Lumber company has 30,000 acres of limits scattered over East Kootenay, employs 300 men, pays $13,000 a month, cut 22,000,000 feet this year and will cut 30,000,000 next year when the Jaffray plant is running.

The Moyie Lumber company has 13,410 acres, employs 60 men when in work and pays $3500 a month in wages.

The North Star Lumber company has 10,000 acres of limits, employs 75 men, pays about $3700 a month, had an output of 10,000,000 in 1905 and will cut about 15,000,000 in the coming year.

The Standard Lumber company owns 18,000 acres near Fort Steele Junction, works 50 men, pays $4000 a month, had an output of 5,000,000 feet this year and will increase that output in the next year.

The Otis Staples Lumber company owns 30,000 acres of limits, employs 175 men, pays $7000 a month, cut 10,000,000 feet this year and will cut 15,000,000 in 1906.

The Watts Lumber company of Wattsburg, own about 12,000 acres of limits, employ from 50 to 60 men, pay about $2500 a month, cut 4,000,000 in the present year, and will double its output in 1906.

The Kimberley Milling company has had a very successful year. It was their first in the locality. The limits owned by the company yield a specially fine description of larch for which there is a never failing demand in all parts of the country. The company found more difficulty in supplying the demand than in finding it. The mill turned out over 5,000,000 feet of lumber during the year, and will run the output up to about 7,000,000 in the coming year. The average number of men employed was 45 with a payroll of over $2000 a month.

The King Lumber Mills, Limited, had a most successful season. The mill on Smith lake has been kept up to its full production, the planer plant at the railway siding has never had an idle day, and the shipments have run up to 7,000,000 feet of lumber. The destination of the great bulk of the product went to points in the Northwest, but the company had a large contract to fill in the supply of all the lumber necessary for the construction of the great zinc smelter at Frank.

During the present year the company has erected a new plant at Tochty, about 40 miles southwest of Cranbrook. This mill has a daily capacity of about 30,000 feet and is already in full operation. There are 18,000 acres of fine limits tributary to this concern. Those limits border the track of the new Spokane-International line for 12 miles and, what its of almost equal importance, the logs from them can be driven on both the Moyie river and Meadow creek With this addition to the company's plant it is anticipated that the output for the coming year will run well on to 10,500,000 feet.

The company maintained an average of 75 men on the payroll for the past year, paying in wages each month about $3800 to which has to be added the cost of the board of the various crews. It is expected that at least 100 men will be employed during the coming year in two mills of the company and the limits around them.

The Robinson-Mackenzie Lumber company had a year of uniform success, having more than maintained the record for output reached by it in former years. It has also employed about the same average number of men, but when pressure of orders ran high had to put on extra hands to meet the demand of the market. During the year the company laid out some 200 acres of its lands in lots of five acres each for the purpose of fruit growing. The experiment has proved a most successful and gratifying undertaking. It is now being arranged that special irrigation facilities be provided for these lots.

The Adolph Lumber company has during the past year sustained the record made by it in 1904. The company has also acquired extensive limits in the neighborhood of Bains lake.

LUMBERING IN THE BIG BEND

While waiting hopefully for the dawn of a mining day in the Big Bend district, its people have meanwhile turned ther attenton with considerable strenuousness to its other natural resource—timber. It is safe to say that there is not in the interior of the province anywhere such a splendid supply of commercially useful and easily accessible timber as in the Big Bend. The Columbia river all the way round, from Beaver to Revelstoke, is bordered by the finest cedar, pine and spruce and the growth is equally good upon all its tributaries, such as Downie and Cummins creeks, Goldstream, Bush, Canoe and Wood rivers. Of the 2300 square miles of the Big Bend area, nearly one quarter, or 500 square miles of choice timber lands are held by timber leases or license holders. The accessibility of the timber is not the only feature commending the Bend to the lumbermen as a field of operations, the prime factor is the wonderful waterway by which it can be driven to a convenient manufacturing point, as at Revelstoke or the Arrow lakes No cheaper, easier and safer system from forest to mill for a big cut can be found. No storms; no towing; no jams; the Columbia river current, broad and strong, is ways and means sufficient and reliable. This is what has led to the erection of the many mills working at and near Revelstoke, and steps are now being taken to organize more operating companies, with mills on the Arrow lakes. The outlook is one of promise for the coming year. The demand on the prairies is growing in volume and the supply, as has been shown, is ready to meet it in the Big Bend. Where but one sawmill sawed its cut a few years ago, four modern ones—enlarging their capacity—cut it now to the extent of about fifty million feet per annum.

MINING OUTLOOK IN BIG BEND DISTRICT

BIG BEND MINING DISTRICT.

(Special Correspondence)

The section of Kootenay known as Big end is that portion of it lying north of he C. P. R. line between Beaver and evelstoke, and takes its name from the ourse of the Columbia river which ounds it on both sides. It is at once e biggest and oldest section of the istrict, and there are many to aver at despite delayed developments, it ill again prove to be also the richest. area some 2300 square miles, all ell and variously mineralized; all avily and usefully timbered; surunded by 140 miles of Columbia river, ostly navigable, and reached by a aterway without a ripple from beyond e 49th parallel, Big Bend has claims on the future that the present should eculate well upon. When most of otenay's present population were bies elsewhere, Big Bend was giving gold from its gravels in millions and steamboat whistled along its wondful waterway. Since the sixties it yielded about five million dollars in d and though those were get rich ck and move on days the pioneers did ough to make historic and proven the alth of French, McCulloch, Smith, ham and Camp creeks and to build this time the deep diggings and hyulic propositions requiring abundant ital and modern machinery to deop.

PLACER

he outlook in this direction is one of mise based upon the results now g obtained from a comparatively properties which have given hyulicing a revival. Other projects under advisement and if, in the comseason, the several undertakings, at a point to spell success or failshould only prove the first, other panies will have little difficulty in ting funds to drift on the deep gravor hydraulic the higher channels. mong the principal properties in ration are the Marshall-Schelling deep drift mine on French creek re they have blocked out several sand yards of rich gravel and spent $60,000 in two years past. Preations are being made by this comto install a modern plant next g.

The American Mining company, also French creek, have spent several sand dollars in preliminary develent this year and from a 100-hour got gratifying results—hopeful of end next season.

e Camp Creek Hydraulic Placer owning six leases of virgin ground he east side of the Columbia, have put in four miles of water ditch and enough gold has been had to justify continued operation on a larger scale. Opposite them on the west side of the river, is the Smith creek hydraulic property which with a well appointed plant and pipe line is a very promising property. The McCulloch Creek Hydraulic Co. has some splendid ground also well tested and opened for development. There is a good plant on this ground also and arrangements are being made to push the work next season.

A wide area of hopeful country lies north west of the Bend, extending to the famous Cariboo placers and still remains untried. Untouched gravels and other creeks may yet be found there as very little placer prospecting has been done since early and halcyon days.

LODE MINING

As the sixties proved the placer properties of the Bend so the C. P. R. completion in the eighties laid the lines for its lode mining. Numbers then went in to the camp and saw the great ore bodies with surprise but the general depression of silver in the early nineties and the difficulties of rowboat transportation drove them out. In 1896 another effort was made at development, and considering the continued depression in mining, absence of proper and cheap transportation, lack of capital and encouragement attending the attempt, much credit is due those who saw it through and equal sympathy for those who had to quit. With the period of steamboat transportation, inaugurated in 1901 by the Revelstoke Navigation Co., whose steamer Revelstoke makes bi-weekly trips to La Porte, and with steady effort by the dominion government at river improvement, a better prospect presents itself. The ore bodies are there large, rich an accessible, of silver, lead, zinc, gold-copper and free gold and it only needs the introduction of capital to produce tonnage for local treatment or shipments to give the camp a general start into activity. At present that hope is fixed on the Standard group (18 claims) owned by the Prince Mining and Development Co.

The Standard group, situated on the southeast fork of Downie creek is the banner property of the camp. Three tunnels with drifts and up-raises have been driven one lead being proved at depth of 556 feet with drifts of 350 feet, and cross cuts from drits showing ore body of 23 to 25 feet wide. Above, or fronting this No. 1 lead, are six other parallel leads with surface showings equally good. All leads can be cut at 200 feet depth by a tunnel of the same length, or foot for foot. The work done has proven ore in sight of about 175,000 tons at an average nett value of $10 per ton equal to a million and three quarters dollars. The ore values are copper, 9 per cent; gold $3; and silver $2; the mineralization being arsenical iron and copper pyrites. The company hope to put in an aerial tram to the river (a distance of only six miles) next season and should this be done an output large and paying is assured. They have a $5.50 freight and treatment rate quoted them by the Granby smelter and allowing $2 per ton for local handling the margin, it will be seen is one to make money on. Work is being actively and systematically pursued on the property, three shifts working.

Another group worth noting is the J. & L. on Goat Mountain, Carnes creek. Considerable work has been done here also showing ore bodies well defined, of good values, and justifying the expenditure of large capital for development. The group consists of five claims owned by Messrs. Kelly, McBean and George. The top tunnel cuts the vein 8 feet wide at 90 feet; about 50 feet below this an open cut shows the ore body about 3 feet wide and lower still an incline has been sunk 50 feet on the vein which shows it about 4 feet wide. Everywhere the general characteristics are the same schist hanging and foot wall, limestone with good red gangue margin on each. In other workings—crosscut tunnel and drift of 200 feet, zinc blende shows strongly going over 30 per cent. The general values of gold, silver copper and lead continue throughout according to the various mineralizations, and the vein one of permanency and contact.

The Keystone Mines, Ltd., own a very promising group of five claims on Keystone mountain. They have two tunnels and a shaft on the ore body which is of zinc blende and copper pyrites in character with good values. This group is to be steadily worked the coming season and hopes are strong that with the advent of more money it will speedily develop into a shipper. The same holds good on the Shield group, southeast of Keystone group on the same mountain. There is an 80 foot tunnel on the Bell claim of this group and a tunnel and several cuts on the Shield claim. The ore is silver-lead highly charged with zinc and going about $100 per ton in average assay, so far. The owners J. T. Woodrow expects to continue working.

Of the other groups and claims on Laforme creek, silver-lead; Carnes creek, arsenical iron and copper pyrite; Ground Hog Basin, free gold veins, and Downie creek, silver and gold; nothing can be said more than that they are all being held and worked in a small way, confident that when once attention is directed their way through improved transportation by steamer or rail or both, or by the entrance of one or more of their number into the list of shippers, capital will find a section of country well worth investment. To advertise without having the goods is a crime soon found out, but to have the goods and not advertise is foolish. Big Bend has the goods and it is advertising them, this, and other ways. It wants money, and money now will make more money for those who will spend it there with judgment.

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The Daily News Nelson, B. C.

COBALT AND NICKEL ORES

Known to Exist in Paying Quantities in Parts of East Kootenay

British Columbia is known to the outside world and to the greater part of its own inhabitants for the gold-copper and silver-lead ores which it produces. It is not generally known that many other minerals are found in the province, minerals containing metals, which, if a local market could be obtained for them, would prove very profitable to the owners, but which, owing to the distance they have to be shipped to a market, at present cannot be profitably handled. In other cases the ores are shipped to local smelters and treated for their gold and silver contents, and with the exception of the lead and copper that they carry, any other metal present, either goes to waste from the slag from the furnace, or else goes into the bullion at a loss to both the shipper and the smelter.

The recent strike of rich cobalt ores in Ontario has drawn attention to the fact that similar ores are found in the Kootenays, and within the next few months it is proposed by eastern capitalists to prospect further for this metal in British Columbia. Until recently the only mines producing cobalt to any extent were those in New Caledonia, Norway, and Sudbury, Ontario, the annual total product being in the neighborhood of three to four hundred tons. Up to the present cobalt has been mainly used as a paint and for chemical work, but new uses are being found for it, and as the price has dropped considerably within the last year, a greater demand is likely to be made for this class of ore very shortly. Ores containing this metal are known to exist in paying quantities at Creston and Fort Steele in East Kootenay, and also in the Similkameen.

Nickel is another metal that great demands are being made for. In British Columbia it is widely disseminated, usually not being found rich enough to be treated for the metal alone. In St. Mary's district one or two small veins are found carrying nicolite, and assaying as high as 40 per cent in nickel. In the Ymir-Lardeau districts silicate of nickel is obtained, carrying about 6 per cent of that metal. In several other parts of the country large veins of pyrrhotite, magnetic iron pyrites, are known to carry nickel in small quantities. This is the ore which is found at Sudbury, Ontario, the largest shipping mines in the world During the last 12 months experts have been sent from these properties to prospect and examine this class of ore in British Columbia, whilst a company has been formed in the state of Washington to exploit the various known bodies of nickel in this neighborhood.

Considerable interest was felt some little time back when the government assayer reported the finding of scheelite in the Similkameen. This ore carries about 50 per cent of Tungsten and is one of the most valuable ores required at the present time, being largely used in the manufacture of machinist tools, where it is mixed with the steel under the name of tungstenized steel. Wolfram, another ore carrying a big percentage of this metal, is found on the east shore of the Upper Kootenay lake and is also associated with some of the lead-silver properties around Sandon.

Molybdenite, sometimes called false galena, is an ore which is found widely scattered through the Kootenays. When found in its pure state it is very valuable and there is good demand for it, but where it is known in this country it is so widely scattered through the rock that some new means will have to be invented to save the values on a commercial scale.

On Morning Mountain, Nelson, and at Ymir, there are claims containing bismuth ores. These ores if they could be treated locally and in sufficient quantities would return great profits, as bismuth is one of the most expensive metals in daily use. Similar ores are found in other parts of the province, and as gold and silver are associated with them they are treated for these metals only.

Platinum in the metallic state, has been found in the Pend d'Oreille river and also in the neighborhood of Nelson, but only in small quantities.

Mercury, and other metals are found in various parts of British Columbia, but space does not justify us in going into further detail in the present article, but in the course of the next few weeks we hope to take the subject up with fuller particulars.

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ZINC VERSUS WHITE LEAD

Movement in France That May be Attended by Important Results

Simultaneous with an unprecedented demand for zinc, which has made the ores of that metal almost as desirable and more sought after than those of the more precious metals, comes the crystallization of a movement, says the Denver Mining Reporter, which has for its object the abolishment of white lead as a paint and the establishment of zinc white as a substitute. The movement is based on the deleterious physiological effects which the use of lead pigment has on those whose occupations require them to handle it.

The sentiment against lead as a pigment has been a matter of academic interest for many years, for it has long been known that certain forms of insidious poisoning were traceable to its use; but it is only recently that those most vitally affected have taken steps looking toward self-protection. There was recently held in Paris a meeting of scientists, philanthropists, contractors, masters and journeyman painters, to the number of nearly two thousand, the purpose of which was to put into definite form, some of the facts and statistics which show the extent and danger of lead poisoning among painters and workmen in the white lead factories and the effects of such exposure upon the health of the workingmen and their children. The interest aroused was sufficient to enlist the sympathy and co-operation of some of the foremost scientists and physicians who addressed the meeting and assisted in drafting suitable proposed remedies.

In the opening address professor Dieulafoy recalled the fact that it was a common experience among physicians whose practice was among the laboring classes to find a long train of characteristic diseases prevalent among the members of families whose supporters were engaged in white lead factories or in the handling of white lead for either exterior or interior painting. Among the maladies stated to be characteristic are lead colic, muscular and articular rheumatism, lead anaemia and saturnine nephritis, which latter ultimately leads to various apoplectic and epileptic complications. In addition to this rather severe arraignment professor Bertillon, the eminent criminologist, gave it as his opinion that the manufacture and use for painting of white lead constituted two of the most unwholesome and dangerous occupations known. Probably the most startling testimony added to the record was that of a prominent physician who stated that the congenital effects of lead poisoning were even more deplorable than the immediate effects on the victim.

It is not surprising, therefore, that armed with such information and backed by the foremost scientific men of their country the delegates to this convention took up the question of a practical remedy. Plainly stated, it consists in the abolishment of lead and its substitution by zinc as a pigment. The actual accomplishment of this reform has been initiated by the introduction of a bill in the chamber of deputies of France, placing a legal hedge about the manufacture of white lead. The act has the substantial approval of the chamber. By its provisions, manufacturers of white lead are given four years in which to close out their business or convert their factories to the production of zinc white. After the period mentioned it is probable that white lead will no longer be legally manufactured in the French republic.

This is a movement which will certainly have a most far-reaching effect. The present consumption of lead in the manufacture of pigments is a very large percentage of the total consumption of that metal; and while it is highly improbable that other countries will follow the immediate lead of France in prohibiting the manufacture of white lead, it is perfectly possible that the extensive utilization of zinc in that country will have the effect of bringing into more prominence the qualities of that metal as a base for paints. Furthermore the sentiment against the use of white lead in France may easily attain such proportions as to lead to the enactment of legislation looking to the exclusion of that material and the prohibition of its use.

The movement will result in no revolution in the paint industry nor will it work any hardship on the producers of lead. It is, however, a straw that indicates the growing favor of zinc in the industries, and this may be legitimately expected to enhance the commercial prospects of that metal.

NICKEL NEAR FORT STEELE

Samples of nickel ore from near Fort Steele, were sent to Carborundum works at Niagara. One lot ran 9.7 nickel and cobalt; another 11.3 in the same metals.

Best copy

NELSON'S REAL ESTATE BUSINESS IN 1905

The past year has been a remarkably good one in real estate, particularly in residential and business buildings and in local fruit lands. The demand for residences exceed the available property. *Practically all the good business buildings* are occupied and there has been no difficulty about filling a vacancy when it occurred at any time during the year. The business blocks are now chiefly held by outsiders who have purchased for investment purposes. None of this class of property is in the market, the holders being well satisfied with their returns. Business properties in Nelson average a yearly net return of from 12 to 15 per cent on the money invested and consequently the owners are not desirous of parting with their property. Real estate agents unite in reporting collection of rents during the year as most prompt and satisfactory. Rents are a little higher than a year ago and remarkably steady.

There has not been any building boom during the past 12 months, but many dwellings and business blocks have been substantialy added to and improved and in order to supply the steadily increasing demand for homes, owned outright, new dwellings will have to be constructed in 1906.

All real estate men are enthusiastic over the great and growing demand for fruit and ranching lands in the neighborhood of Nelson. Local investors have taken up the scheme and many acres bought for speculation purposes are held by residents of Nelson. It has become quite the fashion locally to own a ranch in addition to a local residence. Then many outsiders have been induced to take local fruit lands and these new comers are materially assisting in building up Nelson as the commercial centre of the interior. The volume of business done in ranching and fruit lands for the 12 months just ended shows a great increase over the previous year and the outlook for the *coming year for the men engaged in the* fruit and ranching industry, the real estate dealers, those who have invested in this class of property, and for the substantial increase to the city's and district's prosperity from this source are most encouraging and eminently satisfactory.

There has been no demand for vacant and unimproved city lots, but choice residential lots, easy of access, are hard to find. Purchasers are more inclined to buy land already built on and rebuild or modernize the existing structure.

Tht principal and most satisfactory features in the real estate business for the past year and in the outlook for the coming 12 months are: The steady increasing number of those who own their own homes in preference to paying rent; the coming here of many new residents; the good, steady prices obtained for residential property; the satisfactory returns yielded investors in business properties and the surprising demand for fruit and ranching lands in this neighborhood. The real estate outlook for 1906 taken all round, is decidedly bright for a prosperous year.

Appended are the views of the principal real estate firms of Nelson on the business done and the outlook for the new year:

SHARP & IRVINE—We deal principally in stocks, said Mr. Sharp. We have been *in the real estate business here for two* years now and our turnover for the past 12 months is just about double what it was the year previous. There is a steady demand for residential property. About a six roomed modern dwelling is most asked for. There have been many new comers and most of them prefer to own their own homes in place of paying rent. The demand for dwellings both for purchase and rental has exceeded the supply for the past year and some more *building will* have to be done in 1906 if we are to accommodate those who want to make their homes in Nelson. There is no difficulty in renting a good class of dwelling, but some of the residences require to be modernized before they can command a good return. Stores and offices in the business section are practically all occupied and the rents paid give an excellent return. Owners of these proerties do not want to sell and they are not in the market. The enquiry for fruit and ranching land in the vicinity of Nelson has steadily increased all year and the selling and cultivation of these lands has been a distinct feature of the past year. It means much for Nelson and all indications for 1906 point to a continued demand for these lands at good figures. I think the outlook at the present time for the city and district, from a real estate point is the best we have ever had.

McDERMID & McHARDY—There has been a great and marked increase in the real estate business during the past year, said Mr. McDermid. There have been many more homes purchased outright than ever before. Nelson has become a city of homes owned by the people who live in them, an excellent basis—the best in fact—for the commercial prosperity of any com*munity. The bulk of the best business* properties is now held by outsiders, who have purchased at good figures, for investment. Practically none of this class of property is in the market at the present time. Investors are obtaining good but not exorbitant rentals, which net them from 12 to 15 per cent. Practically all the good business places are rented and there are no vacancies. There has been no speculation in city lots, but an exceedingly *satisfactory demand for residential pro*perty. We have made a specialty of this business and our sales for the past year represent a turnover of from $40,000 to $50,000. The demand continues and I am satisfied that more buildings will have to be erected in 1906 to keep pace with the demand. Like everyone else in the real estate business we have been astonished at the growth of the sale of fruit and ranch lands hereabouts, which commenced a little over a year ago. We are making a specialty of fruit lands this year and from the enquiries received believe we can do a large and profitable business in them. Prices for residences and business properties are stiffer than a year ago and remain steady and strong. There are more tenants offering than can be supplied. Nelson as a commercial and residential centre for the interior has greatly improved its position in the past 12 months and one of the chief contributing causes has been the growth of the fruit lands business. There is no boom in sight; we do not look for one and do not want it in view of the rapid and steady growth of the city and district. The outlook for the coming year from a real estate man's point of view, was never brighter or better and is decidedly satisfactory.

S. M. BRYDGES—Just what Mr Brydges *profits were for 1905 in the real estate* business is not a matter for publication, but they were evidently of an entirely satisfactory nature.

"The real estate outlook for Nelson and district," said Mr. Brydges, "was never brighter or better in the history of Kootenay than they are today as we stand on the threshold of the new year. Personally last year was a prosperous one for me, and I look for an advance in the coming season. Business blocks? There are now practically none in the market. They are held as very satisfactory investments by outsiders chiefly, who obtain a good return on their money of from 12 to 15 per cent, and that is good enough for most people. I successfully disposed of several business blocks this last year, the principal ones being the well-known K.W.C. block, at the corner of Baker and Ward streets, which went to a Winnipeg investor for $35,000; the Queen's hotel, Baker street, which sold for $10,000; the Bodega saloon, $7500 and the barber shop to the west, $4500, both Baker street properties. In residential properties my sales for the year amounted to about $15,000; of fruit and ranching lands I sold 1500 acres for $35,000. With the exception of 202 acres on the Columbia river, all these lands were on the West Arm of Kootenay lake. Nearly all the fruit and ranching lands taken up are purchased by people who intend living on and working these properties. They run from 5 to 10 and 20 acre holdings and as there are now available over 5000 acres for the purposes mentioned in the neighborhood of and commercially tributary to Nelson, you can see what a large population is involved in the settle*ment and cultivation of these lands. In* addition to the acreage referred to, a much greater territory will later come into use and occupation. The selling price of $50 per acre, which I think is now the established price of these lands, is a fair one to holders and future purchasers. It has now reached this figure from about $14 per acre at the commencement of last season. I have every confidence that the coming year will witness a still further *increase in the importance, value and* selling powers of all Nelson and district real estate."

T. G. PROCTER—The real estate situation and the outlook generally from a commercial standpoint for Nelson and district is so excellent that I am decidedly of the opinion that the city council should take up the question of systematically advertising the city and district, and expend a considerable sum this coming year in so doing. The city council should work with the board of trade in the matter and much good can be accomplished.

Speaking as a personal investor in fruit lands as well as a real estate agent, in the last two weeks of the year, I have purchased a mile frontage in and around the Outlet at Procter, and will offer these lands this coming year in 10 acre lots, with reasonable building conditions suitable for a good class of settlers. It is the better class of settlers that want to come here and we should encourage this class as much as possible. Persistent advertising is the best way. I think the present price of fruit lands hereabouts, say from $25 to $50 per acre, according to location, offer every inducement to bona fide settlers and investors. The result of our fruit exhibit in London has in my opinion doubled the value of nearby fruit lands for the right sort of purhcasers.

What strikes me as one of the leading features of the past year in real estate is the final, or nearly final payment, made to eastern loan companies on Nelson residential properties. This city has been built up by the loan companies from the start and yearly large sums in the aggregate have gone back east on mortgage account. Many of these mortgages have been paid off or nearly so, and in future money formerly sent east will be invested here. *Local people are already large investors* in fruit lands and Nelson real estate. They are building launches and lots of other luxuries they managed to get along without before, and I look for some building and other improvements in the residential section this year. A couple of good apartment houses, well situated and not costing too much for construction or site, but fitted up with all modern conveniences, would make handsome returns to any investor. I hope to see at least one of these erected this year. Rents are good and colections were never better or more prompt. The real estate outlook for 1906 is in my opinion a healthy, sound and extremely satisfactory one.

H. & M. BIRD—Of all local real estate men the Messrs. Bird are known to be perhaps the most conservative. They do admittedly one of the largest businesses in the Kootenays, and their clients come from widely separated points.

"I think I can say," said Mr. Bird "that we regard the business situation in Nelson *and district from a real estate standpoint* for the past year and the present outlook for 1906 as both extremely satisfactory. Last year was the best we ever had and we look for a still better season in 1906. Prices have remained satisfactorily steady in the city; rents are firm and readily collectable and values are higher. This is particularly the case regarding fruit and ranching lands, where the advance in values during the past year has been very *marked. Business properties return from* 10 to 15 per cent to investors and residential property is steadily in demand, exceeding plainly the supply. This is so much the case that I look for a good deal of building this coming year. People keep coming in here to settle until they have exhausted our supply of residences, and more will have to be built. What is most wanted is a lot of modern six or seven roomed dwellings. There is no difficulty in finding purchasers or tenants for such houses. The Kootenay fruit show in London is showing an excellent effect on real estate hereabouts. We are getting enquiries almost daily from literally every part of the world. As agents for the C.P.R. we *have sold a large quantity of their lands* during the past 12 months, mostly to settlers in small blocks.

"We deal somewhat extensively in timber lands and concluded one large sale of over 3000 acres of timber limits just at the close of the year. We think the lumber industry this year will be more in evidence this coming year than formerly. It is too important not to be reckoned as an important factor in the upbuilding of this city and district. Taking the real estate outlook all round it has never been brighter or better than at the present time."

J. E. ANNABLE—I have made a specialty of fruit and farm lands this past year; and I am an optimist on the situation. It not only was never so good but the business has grown so rapidly that a great future is assured for it. I have handled over 4000 acres this last year, *mostly in small holdings, from five acres* up and from the way communications and enquiries are pouring in daily, I look for a large influx of settlers into this district the coming year. I may be too enthusiastic, but I estimate that there will be a demand in the next 12 months or so for 50,000 acres of fruit and farm lands in the Kootenays. Prices are on the increase steadily but are yet on the ground floor

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NELSON WHOLESALERS' PROSPEROUS YEAR

The year 1905 in the wholesale trade of Nelson has seen the end of a long perior of industrial and commercial depression in Kootenay and the beginning of an era of improvement and growth. The causes of the change are few and simple. The mining industry has recovered at length from the shocks given it by repeated failures due to extravagant and incompetent management, and worse. New properties have been opened up and are devolping satisfactorily. Confidence in the mines of Kootenay is restored. The association and co-operation of lumbermen have put the industry again on a paying basis, a third resource of Kootenay has attained recognition during the year. The success of a few pioneer fruit growers has already attracted a large number of well-to-do settlers to the valley lands.

All these influences have combined to restore prosperity and confidence, and to attract population and wealth, thereby improving the trade outlook materially. The wholesale merchants have lately been interviewed by a member of The Daily News staff and all expressed satisfaction with the business of the closing year and hope for a continuance of the improvement during 1906.

F. Starkey replied, in the words of a circular he was about to issue to the trade.

"It is with pleasure we can record a larger turnover than in any previous year, due not to any boom, although the railway construction in the Boundary, no doubt, has tended somewhat to give a larger impetus to the ordinary trade; yet this section of the country is making rapid strides in the development of its mines and a consequent increase of the smelter forces. Besides these two actors there is the increasing industry of fruit raising. These combined, both being built on a solid foundation, bespeak for the future of this district an abundance of prosperity.

Rossland and Trail have more than held their own.

Ymir district—The new discoveries in the Ymir mine and the properties that have proven valuable at Salmo have all tended to strengthen the faith of those who have capital invested and business men generally.

Slocan—While to the outsiders there has been nothing moving to any great extent, yet those who are closely in touch with the country are fully aware of a very material advance in the way of development of properties, and with the leasing principle inaugurated it is fully expected that 1906 will be the banner year for good old Slocan.

East Kootenay, we might say, has been prosperous. Each and every town has advanced to a more substantial stage and with the yearly development of its mineral, timber and agricultural resources, the future points to East Kootenay as being one of the richest portions of the country.

Lardeau district—At Camborne a general improvement has taken place. Trout Lake and Ferguson, even with the drawback of their rich mines being confined to almost only development work have kept well to the front from a business standpoint.

Nelson and Kootenay lake has also progressed. The proving of the Reliance and the Molly Gibson, the Silver King again a shipper, and several other valuable properties taken hold of by parties with sufficient capital to bring them to the front, all have tended to increase the volume of business. Some of the properties, at Ainsworth, for instance, which were closed are now being put in shape and will shortly be shippers, enabling the smelters at Nelson and Pilot Bay to have sufficient material to keep them running. The best proof of this is in the fact that the Hall Mines smelter is now installing an entirely new system of treating lead ore. The general influx of well-to-do settlers purchasing land for the purpose of going into fruit raising, the manufacturing establishments, including mill, wire, foundry, marble, confectionary, cigar concerns and other commercial interests have all contributed to Nelson's prosperity.

Summing up we cannot but foresee for 1906 a stronger and a more solid growth than we have enjoyed before. With our mixed resources we assuredly inherit the richest portion of this wealthy province."

G. Nunn, of A. Macdonald and company, endorsed generally the views of Mr. Starkey, but added: "I am not quite so optimistic about the Slocan. The signs of an early revival there are not apparent to me. With the other districts, especially the Boundary we are more than satisfied and consider the prospects for next year excellent. In East Kootenay we are still heavily handicapped by the preferential freight rates given to the merchants of Vancouver. The removal of that grievance, if it could be obtained, would be a great stimulus to the trade of Nelson."

N. L. McInnes, of J. Y. Griffin and company—The trade of the year has been very good with us. Next to the Boundary we have found Rossland and Trail our best customers. I think that an improvement has already taken place in the Slocan district and that it is certain to continue. Ymir and East Kootenay have also been good markets.

A very encouraging feature of the year has been the rapid improvement in trade during the last six, and especially the last three months.

G. A. Brown, of the Brackman-Ker company—Our business doesn't vary very much from year to year, except slowly with the growth of population. The last half of the year, however, has certainly seen a marked improvement.

E. F. Gigot, of the Hudson's Bay company, said briefly: You may say that we are satisfied with the year's business.

J. A. Macdonald—This is my first year in the wholesale business exclusively. I can hardly compare it with other years, but the business has been very satisfactory, it has increased rapidly during the second half of the year and the prospects for next year are certainly good.

J. A. Montgomery—The wholesale department of our business has been so good that we are giving up the retail branch on account of it. We have had a very good year and expect a still better one in 1906.

E. Ferguson—The trade for 1905 was better than that of the years immediately preceding. Signs of permanent improvement have been very marked especially during the last few months.

The Ashdown Hardware company—This has been easily the best year for our business since wo established in Kootenay. The demand for hardware has been greatly increased by the opening and development of new mines, railroad construction and the revival of activity in lumber camps. All those causes are certain to be at work during 1906 and most people expect expansion in each. If that expectation is realized the wholesale hardware trade will certainly be vary active. With even a continuance of present conditions next year will be very profitable.

The Wood-Vallance Hardware company—We have been here only a year and a half. We can only compare the last six months of each. This year has been a great improvement over last, due chiefly to the greatly increased demand from Boundary mines and smelters for all kinds of heavy hardware—a demand which is practically certain to be even greater next year.

J. R. Hunter, of the Nelson Hardware company—Our wholesale business is almost limited to the summer months. It was very good in 1905, but I cannot predict what it will be in 1906.

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