

BRITISH COLUMBIA DEPARTMENT OF MINES

Hon. S. L. Howe, Minister.

ROBT. DUNN, Deputy Minister.

J. D. GALLOWAY, Provincial Mineralogist.

J. DICKSON, Chief Inspector of Mines.

D. E. WHITTAKER, Provincial Assayer.

BULLETIN No. 2

SUMMARY AND REVIEW

OF THE

MINERAL INDUSTRY OF BRITISH COLUMBIA

FOR THE SIX MONTHS ENDED JUNE 30TH

1933

COMPILED BY

JOHN D. GALLOWAY, Provincial Mineralogist.



PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C. :

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To the Hon. S. L. Howe,

Minister of Mines, Victoria, B.C.

SIR,—I beg to submit herewith Bulletin No. 2, "Summary and Review of the Mineral Industry of British Columbia for the Six Months ended June 30th, 1933." The object of this bulletin is to summarize briefly the condition of the industry and give approximately the value of the mineral production for the period under review.

Included are reports on each of the Mineral Survey Districts of the Province by the Resident Mining Engineers and details of coal production by the Chief Inspector of Mines.

I am, Sir,

Yours faithfully,

JOHN D. GALLOWAY,

Provincial Mineralogist.

Bureau of Mines,

Victoria, B.C., July 15th, 1933.

Summary and Review of the Mineral Industry of British Columbia for the Six Months ended June 30th, 1933.

STATISTICAL REVIEW.

By JOHN D. GALLOWAY, PROVINCIAL MINERALOGIST.

PRODUCTION.

The gross value of the mineral production of British Columbia for the six months ended June 30th, 1933, is estimated at \$12,407,984. This figure compares with \$14,336,060 estimated in the corresponding period in 1932, a decline of 13.4 per cent. The following table shows the estimated output of metals and minerals for the first half of 1933, and corresponding figures for the similar period in 1932:—

ESTIMATED MINERAL PRODUCTION FOR SIX MONTHS ENDED JUNE 30TH, 1932,
AND JUNE 30TH, 1933.

Product.	QUANTITY.		VALUE.		1933.	
	1932.	1933.	1932.	1933.	Increase.	Decrease.
Gold, placer* .....oz.	3,891	6,470	\$66,150	\$110,000	\$43,850	.....
Gold, lode .....oz.	87,800	105,600	1,814,987	2,182,946	367,959	.....
Silver .....oz.	3,700,000	3,365,000	1,214,969	1,169,338	.....	\$45,631
Copper .....lb.	28,700,000	17,000,000	1,899,108	1,137,300	.....	761,808
Lead .....lb.	128,000,000	128,000,000	2,904,320	2,752,000	.....	152,320
Zinc .....lb.	68,500,000	64,000,000	1,607,010	1,830,400	223,390	.....
Coal (2,240 lb.).....tons	808,200	592,000	3,636,900	2,516,000	.....	1,120,900
Structural materials .....	.....	.....	900,000	450,000	.....	450,000
Miscellaneous metals and minerals .....	.....	.....	292,616	260,000	.....	32,616
Totals .....	.....	.....	\$14,336,060	\$12,407,984	.....	\$1,928,076

* Placer gold valued at \$17 per ounce.

The decrease in production values was caused by lowered output of all metals except gold and lead, a heavy falling-off in coal tonnage, and a greatly decreased output of structural materials. The total value of metallic production was only slightly less than in the comparative period in 1932, the decline only amounting to 3.4 per cent. The main drop was therefore in coal and structural materials.

The tonnage of ore mined during the half-year was approximately 1,800,000 tons, a considerable decline from the rate in 1932. This was largely caused by curtailment of operations at the two big copper properties, *Britannia* and *Hidden Creek*.

Towards the end of the period, silver, lead, zinc, and copper prices improved slightly, but not enough to greatly affect the valuation. All metal prices have fluctuated owing to changing international exchange and inflationary tendencies, but, making due allowance for these factors, metal-market prices are gradually improving, with a much better outlook for the last half of 1933.

As expected, gold production showed an increase both in placer and lode. The combined gold figures totalled \$2,292,946 for the half-year, as compared with \$1,881,137 in the comparative period, an increase of 22 per cent. This is calculated with gold at the standard price, but, in addition, a substantial premium was enjoyed by gold-producers, averaging about 21 per cent. It is estimated that approximately \$480,000 was obtained in premium, and therefore the total return in Canadian funds to gold-producers in British Columbia was approximately \$2,772,000 for the half-year. On this basis the value of gold production was greater than that of any other metal or mineral produced.

The output of the leading gold-producers for the Province in fine ounces for the half-year (June estimated) was approximately as follows:—

	Gold. Fine Ounces.
Pioneer	46,900
Premier	24,410
Bralorne	11,769
Reno	6,249
Cariboo Gold	3,000
Miscellaneous	13,272
Total	105,600

Including premium, the price of gold averaged about \$25 an ounce for the half-year.

Lode-gold production increased because of larger outputs by *Pioneer*, *Bralorne*, and *Reno* mines, the advent of a new producer in *Cariboo Gold*, and several small shippers. These gains were offset in part by a substantial drop in the output of the *Premier* and only a small production from the *Union*. Crude-ore shipments have been suspended by the *Premier* and lower-grade ore is treated in the mill. The *Union* mill was closed down until early in June. The steady exhaustion of the *Premier*, which formerly produced 60 per cent. of the annual gold-output of the Province, will necessitate substantial new producers in order to make up the loss. Great activity prevails, however, in developing new gold properties, so that the upward trend in production should be maintained.

The placer-output, estimated at \$110,000, shows an increase of \$43,850 over that of the comparative period in 1932. The greater part of placer production is always made in the last half of the year, so that indications point to last year's total figure of \$346,800 being exceeded in 1933. Many individuals have again been "sniping" and prospecting, but a late season and high water in the streams has handicapped these efforts. Many placer-mining enterprises are being steadily proceeded with and conditions are generally satisfactory. The present premium on gold, whereby the producer is getting \$30 to \$31 per fine ounce (Canadian funds), is proving an incentive to still greater efforts at gold-mining, both placer and lode.

Silver production at 3,365,000 oz. shows a small decline, mainly caused by a considerably lower output from the *Premier*. This mine and the *Sullivan* are the important producers. Interest is, however, rapidly being concentrated on silver-mining, because of the steadily improving market price of the white metal. A price of 50 cents an ounce for silver, when realized, should cause much silver-mining in the Province.

Copper production at 17,000,000 lb. showed a heavy decline as compared with 28,700,000 lb. in the first half of 1932. The major portion of the output was made by the Granby Company at Anyox. *Britannia* mine only produced a small quantity of copper. Although the market price of copper is rising, much difficulty still prevails in marketing the British Columbia output. A considerable improvement in the general copper situation will be necessary before there is any pick-up in copper-mining in the Province.

Lead production of the Province comes almost entirely from the *Sullivan* mine, and the output the first half of 1933 is estimated as being the same as in the corresponding period in 1932. It has recently been announced that the *Monarch* mine at Field, controlled by Base Metals Corporation, will resume production in the near future, which will mean a substantial additional output of lead.

The zinc-output for the half-year was only slightly less than in 1932. Zinc production also comes mainly from the *Sullivan* mine, but this year a new producer was recorded in the *Britannia*. This mine, formerly a copper-producer, is now recovering a zinc concentrate in the mill, and a larger output of zinc (in pounds) was made in the half-year than of copper. The reopening of the *Monarch* mine will also contribute a considerable output of zinc in the last half of the year.

Coal-output, which showed a heavy decline, is discussed in the report by the Chief Inspector of Mines at the end of this bulletin. The outlook is for a considerable improvement in the coal situation in the last half of the year.

The value of structural materials produced was only \$450,000, or one-half that of the comparative period in 1932. This reflects the well-known fact that building and construction work is almost at a standstill.

The output of miscellaneous metals and minerals, valued at \$260,000, shows only a small decline of \$32,616 from the output for the first half of 1932. A higher output is anticipated in the last half of the year.

GENERAL SITUATION.

Mining is one of the bright spots in industry of the Province at the present time. Commencing more than a year ago, renewed activity in gold-mining preceded the general improvement in conditions, now apparent in several quarters. As a result of this activity, at least 1,000 more men are employed in mining than at this time a year ago. Now, improvement in silver, lead, and zinc prices and the more optimistic feeling prevailing are causing metal-mining generally to show recovery from the depression. A notable evidence of this is the decision of Base Metals Mining Corporation to reopen the *Monarch* mine at Field. Some men are now employed and it is expected that active mining and milling will be resumed shortly. Other encouraging signs were the recent announcements by the Consolidated Company of a 5-per-cent. increase in wages, and by the Granby Company of a 10-per-cent. increase, to take effect July 1st.

The most active gold camps have been the Bridge River area, Nelson Division, and the Cariboo district. In Bridge River the success attending skilled geological reasoning followed by successful development-work has placed the *Bralorne* mine amongst the leading gold-mines of the Province, with an assured life of several years and many interesting probabilities and possibilities yet to be explored. In the Nelson Division successful developments at the *Reno* have resulted in adjoining properties and others in the general area receiving attention, with in certain instances encouraging results. In the Cariboo district many operations are proceeding, but no outstanding results are yet reported, except at the one producing mine, *Cariboo Gold*. Results at this property are fully up to expectations, and now that the company is amply financed for intensive development further important ore disclosures are expected by the end of the year. Other operations in the area have not yet had time to carry out much work, but a thorough appraisal of the lode-gold potentialities of the Cariboo district will be carried out in the near future.

The extreme activity in gold-mining assures that many meritorious prospects that have lain dormant for years will be adequately explored and developed. Areas of potential gold mineralization are being intensively prospected. Several additional gold-mines should result from the favourable developments now proceeding.

The interest by the public in gold-mining is shown by the number of new mining companies incorporated. This is shown in the following table:—

MINING COMPANIES INCORPORATED DURING SIX MONTHS ENDED JUNE 30TH, 1933.

Month.	Gold.	Other.	Private.	Public.	Total.
January.....	3	....	1	2	3
February.....	9	....	5	4	9
March.....	10	2	8	4	12
April.....	5	1	4	2	6
May.....	20	2	11	11	22
June.....	35	2	15	22	37
Totals.....	82	7	44	45	89

For the whole year 1932 only forty-six companies were incorporated, of which forty were formed to develop gold properties. This accelerated pace of company promotion is useful to the Province only if the efforts are intelligently directed. Evidence accumulates, however, to show that many companies are being promoted to acquire properties in "fashionable areas" which have no possible present or prospective value. These properties represent ground hastily located in order to afford the basis of a quick sale or promotion.

Under the operation of the "Securities Act," the public is assured that a reasonable proportion of the money raised in initial stock-selling goes into the treasuries of the companies. But the time would seem to be opportune to consider whether some further protection for the public is desirable. It is urged by some that a public promotion should not be allowed based on ground without appreciable showings or development. Such properties would first be

developed by private syndicates and on the report of a qualified engineer that certain possibilities existed, then the public promotion would be allowed. This plan would, of course, be open to certain arguments against it and many widely divergent opinions are held. Under any laws or regulations the public will always lose unless they "investigate before they invest."

At the present time the rather pathetic condition exists of several companies with handsome treasuries and no properties with showings on which a reputable engineer can advise development. In certain instances the stocks of companies in this category are being traded on the curb market at prices in advance of the initial offering, and it is a certainty many losses will occur to the public. As there are plenty of prospects in the Province with at least some evidence of mineralization, it is hoped that these companies will divert their expenditures to properties with possibilities.

In the present boom very few misstatements of facts are being put out directly by mining companies, but the crop of rumours is legion. These appear in the daily press, mining papers, and tipster sheets. In so far as possible the Department of Mines is putting out reliable facts regarding the mining properties of the Province, and the public is advised for their own good to make use of this information.

The outlook for the last half of 1933 is for increased mineral production in nearly all lines, expanding employment, and a general all-round improvement in the industry. The years of depression have improved mining and metallurgical technique by lowering costs and the obtaining of greater efficiency. The industry is therefore in excellent condition to take advantage of improving markets and prices.

REPORTS OF RESIDENT MINING ENGINEERS.

NORTH-WESTERN MINERAL SURVEY DISTRICT (No. 1).

REPORT BY JOSEPH T. MANDY, RESIDENT MINING ENGINEER (HEADQUARTERS, PRINCE RUPERT).

Although gold, both placer and lode, holds the centre of interest in this district at present, there are definite signs of a revival of interest in silver and base metals. With the very appreciable resources of silver, lead, zinc, and copper in No. 1 District, this is a very important and encouraging aspect and has further stimulated the generally increasing activity. An exceptionally heavy and prolonged winter snowfall has retarded exploratory operations in the higher altitudes. In this respect the season is about one month behind that of the average year. Notwithstanding this, much enthusiasm has been shown and many outfits ventured into the field earlier than usual.

A marked increase of general activity as compared with 1930, 1931, and 1932 is unmistakably evident, and the 1933 season promises to be an exceptionally active and constructive period in all branches of the mining industry. This is indicated in:—

- (1.) A marked increase in the number of prospectors in the field.
- (2.) A more intensive, detailed, and efficient prospecting and exploration than ever before.
- (3.) Increased influx of capital for development and exploration and its sound and efficient application.
- (4.) Promising virgin areas being prospected by individuals and syndicates.
- (5.) Active and sound development of several promising lode-gold properties being undertaken by well-financed organizations, with several new operations starting up.

PROSPECTING.

Prospecting activity and enthusiasm has markedly increased and, despite adverse weather conditions, an exceptionally heavy and late snowfall, many outfits and individuals made an early start into the field. Although the 1932 season was very active in this respect, the 1933 season promises to be one of the busiest and most constructive in the history of the district. Men venturing into the different areas plan detailed and intensive work and are better equipped than ever before with necessary geological and technical knowledge. In this respect prospecting in this district appears to be definitely entering a more intelligent and constructive phase than ever before, and with the elimination of much of the former wasteful effort increasingly important results can be expected. To the training, encouragement, and assistance rendered by the Department of Mines can be ascribed much of the improvement in this respect.

In the coastal area of the Skeena Division many men are carrying out detailed prospecting of likely areas in the batholith. On the Queen Charlotte islands increasing numbers of men are undertaking intensive prospecting of promising gold areas. Prospecting is especially active in the lode- and placer-gold areas of the Stikine and Atlin Divisions and several well-equipped outfits have gone into the Squaw Creek-Tatshenshini River areas. Important results are expected from these sections.

LODE-MINING.

During the first period of the year a strike at Anyox unfortunately necessitated the suspension of operations by the Granby Consolidated Company for a short time. With very creditable energy and organization, operations were, however, again quickly resumed. By the end of the half-year the *Hidden Creek* and *Bonanza* mines and the mill and smelter had been gradually worked back to a normal operating basis, with the mill handling about 5,000 tons daily, and production and shipments being maintained at about the same rate as in 1932.

The Premier Gold Mining Company has continued normal operation. The only outstanding change in this operation during the six-month period is the cessation of crude-ore shipments to the smelters consequent on the exhaustion of shipping-grade ore. For the six-month period 9,647 dry tons of crude ore was shipped to Tacoma and Anyox. Ore milled in the same period amounted to about 81,868 tons. Total output for the period amounted to approximately 24,410

oz. gold and 599,208 oz. silver. The cessation of high-grade shipments has necessitated metallurgical improvements and a rearrangement of the mill flow-sheet. About 500 tons of ore is now put through the mill daily, which is an increase of 25 per cent. over the former milling practice. The tramway operations have been cut down to one eight-hour shift for six days a week. For the maintenance of required transportation, and regardless of the length of life of the mine, it was found necessary to install a new travelling-cable; this was carried out early in the year. Mining has been carried out on known ore-bodies and the principal tonnage shipped and milled has been drawn from broken reserves. Exploration has been continued adjacent to the producing areas, but no new ore of importance has been located. Considerable exploration was carried out on the sixth level horizon, but no commercial ore was found.

On this property, situated on Porcher island, several important new lenses have been uncovered and construction of a 25-ton mill was started. This **Surf Point.** should be in operation by the end of June, treating ore assaying about \$15 per ton in gold and producing about 2½ tons of concentrate per day assaying \$150 in gold per ton.

On the *Eddy Pass* property, adjoining the *Surf Point*, Frank Patterson, with the assistance of one man, has been open-cutting a small though continuous high-grade vein and has taken out about 80 tons of ore that should assay about \$60 in gold per ton. This is a very promising vein and with others of equal promise known to occur on this group a splendid opportunity for a profitable small-tonnage operation is indicated.

On Princess Royal island interest in the old *Surf Inlet* mine has been revived. The claims of this old property, which includes the *Surf Inlet* and *Pugsley* mines, formerly operated by the Belmont-Surf Inlet Mines, Limited, have been taken over by the Princess Royal Gold Mines, Limited, which has also optioned the adjacent *Wells* group. It is planned to recondition the old *Surf Inlet* mill, penetrate and explore the *Wells* ground from the old *Surf Inlet* workings, and explore for the continuation of the known ore-shoots on the *Pugsley*.

On the Queen Charlotte islands a very encouraging revival of activity has materialized. The *Rupert* group (refer *Kootenay* group, 1932 Annual Report) has been taken up by the Haida Gold Mines, Limited, and methodical exploration and development commenced by a small crew. Initial work is reported as being quite encouraging.

Exploration of the *Early Bird* (see 1932 Annual Report), Mitchell inlet, west coast of Moresby island, is being undertaken by W. G. McMorris and associates, of Vancouver. It is understood that machinery and equipment for this undertaking is being shipped to the property.

Exploratory work on the *Skidegate-Sunrise* by Kitsault Mines, Limited, was suspended early in May, pending further financing. Up to the period of closing, drifting and crosscutting had been carried out on the 100-foot level, where good vein-widths have been exposed, but so far no commercial ore-shoots. Considering the values in places on surface and to the 50-foot level, the good widths and defined structure of the ore-body, further work is considered warranted to determine the possibility of commercial ore in the lower horizons.

In the Alice Arm area heavy and late snowfall has retarded the commencement of general exploration on the higher altitudes. With the improvement in silver prices, interest in this very promising camp is reviving and the outlook for increasing activity is bright.

In the Portland Canal Division general exploration has started on several properties. Leasing operations are continuing on the *Duncell* and very creditable work has been accomplished in the equipment of a small-tonnage mill for the treatment of ore below shipping-grade coming from small operators. This should provide an additional incentive to small operators, and it is expected that an increase in small leasing operations will materialize. Exploration of the *Salmon Gold* group in the upper Salmon River valley is being planned by Vancouver interests. With the reorganization of the Georgia River Gold Mines, Limited, and the acquisition of its assets by Helena Gold Mines, Limited, further exploration and development of this property is planned.

Arrangements have been completed for further exploration of the Unuk River section by the McKay Syndicate and also another one of Premier, B.C. About 1 ton of supplies and equipment will be transported by aeroplane as soon as snow conditions permit.

In the Taku River area further surface exploration of the *Smith-Wilms-Bacon* groups and the underground exploration of the *Whitewater* group is being undertaken by the Alaska Juneau Gold Mining Company.

In the Atlin area a marked revival of interest in lode-gold mining is materializing. Many dormant properties have been restaked or leased and outside interests are active in the acquisition of options, particularly in the Big Horn River area. As pointed out in various Department of Mines reports, several sections of the Atlin area have promising lode-gold possibilities worthy of intensive further exploration. It is expected that activity in this respect during the 1933 season will be productive of important results.

PLACER-MINING.

Several men have been making expenses or small wages on the beach placers of the east coast of Graham island, Queen Charlotte islands. On Bluejacket creek, Masset inlet, from five to seven men have been employed in this way, using blanket sluice-boxes for recovery.

On Douglas creek, Kitsumgallum lake, Skeena Division, twenty-eight individuals have been getting promising indications from prospects, or earning expenses or wages from sluicing. At the break-up, however, high water necessitated a cessation of most of these operations.

In the Stikine Division, operations on Barrington river by the Barrington Company will be continued by a gasoline power-shovel to replace the dredge which proved inefficient to handle the ground during the 1932 season.

In the Liard Division, exploration of the McDame Creek section is being continued in a limited degree. The Gold Pan and Little Muddy River areas are very active and good results have been achieved. Operations are being extended to several creeks in the Little Muddy area and further discoveries are expected from this section.

Further increase of activity is materializing in the Atlin Lake section and operations are extending into the outlying area. Many new leases have been taken up by outside interests, including Eastern Canadian capital, and important extended exploration is under way. The outlook for an increased placer-gold output from this section is bright.

Several outfits have gone into the Tatshenshini-Squaw Creek area. Preliminary test-pitting for dredging possibilities in the Tatshenshini valley was undertaken by Vancouver interests early in the year, and it is understood encouraging results were encountered. Early in the season a Keystone drill and crew were transported in by aeroplane and further testing by drilling commenced. The results from this work are not yet available.

NORTH-EASTERN MINERAL SURVEY DISTRICT (No. 2).

REPORT BY DOUGLAS LAY, RESIDENT MINING ENGINEER (HEADQUARTERS, HAZELTON).

GENERAL SUMMARY.

The outstanding feature of the period is what can best be termed "The Second Cariboo Gold-rush." Doubtless, primarily due to the success gained by the Cariboo Gold Quartz Mining Company, Limited, and the consequent expansion of this company's operations, duly chronicled in the reports of this Department, a realization of the potential importance of neighbouring ground first seems to have found general acceptance in the late fall of last year. Extensive blanket-staking of ground in the more immediate vicinity, mainly after snowfall, at once followed, continuing during winter and spring of the present year, spreading throughout the Cariboo and Quesnel Mining Divisions, and the present position is that a very large portion of this area is now covered with mineral claims which extend in a broad band from Hixon creek to the headwaters of the Horsefly river.

These mineral claims may be divided into two broad classes—(a) those covering the pre-Mississippian veins exemplified in the Barkerville, Stanley, and Yanks Peak areas, and (b) those covering the Jura-Cretaceous veins of the Central batholith. Many of the most important mining interests of the Province have acquired property in the "Barkerville Belt" more immediately adjacent to Bowman's "Line E-F" (refer to Amos Bowman's map of the Cariboo district and to "The Lode-gold Deposits of British Columbia," Bulletin No. 1, 1932), and many new mining companies have been incorporated.

The old towns of Barkerville, Quesnel, and Stanley have witnessed a transformation scene and are now centres of much activity. The larger mining companies have established offices in Barkerville and have started preliminary operations. Unfortunately, however, the most backward spring known for many years, with incessant rain, has greatly impeded effort in many ways and has slowed down traffic on roads. Indeed, at the time of writing many showings are still covered with snow.

Of very real service at the present juncture is the policy of the Director of the Geological Survey in sending senior geologists into the areas most in need of their services. W. E. Cockfield and G. Hanson have established a base camp at Beaver pass, and it is understood that F. A. Kerr is now in the Manson section.

Just before the close of the period under review the Cariboo Gold Quartz Mining Company, Limited, produced its third gold brick. This company commenced milling on January 2nd and its production record to date is regarded as being distinctly satisfactory, in view of all the factors at issue. Developments underground at this property are very satisfactory.

In so far as it is possible to form an opinion, it seems likely that the larger mining interests now in the Cariboo district have decided to thoroughly prove the lode-gold possibilities, and it is a matter for much congratulation that the direction of operations lies in the hands of highly trained executives. There can be no question that the matter of the lode-gold possibilities of the Cariboo is of very signal importance to the Province as a whole, and the developments of this year will undoubtedly be awaited with profound interest. At a time when unemployment is rife, even preliminary operations have undoubtedly had an alleviative effect, which has been felt already, inasmuch as mining development affects many other avenues of industry.

While lode-gold activities have centred during the period largely in the Cariboo and Quesnel Mining Divisions, at several points in the Omineca Mining Division a certain amount of development is taking place at lode-gold properties. Placer-mining continues active throughout the Cariboo and Quesnel Mining Divisions and in the Manson section of the Omineca Mining Division. At several other points in the latter Mining Division, such as McLeod river and Lorne creek, it is understood that a considerable number of men are working. World-wide financial conditions have recently revived hopes as to silver-lead mining, but no activities in this direction are known to have taken place during the period under review. A well-equipped branch assay office has been opened in Barkerville by G. S. Eldridge & Co., of Vancouver, so that prompt assay returns of samples can now be obtained in this area.

The Resident Engineer desires to express his thanks to mine operators and prospectors generally for many courtesies extended, but begs correspondents to bear in mind that no office staff is retained in the Department's office in this district; consequently, during the busiest field season on record, it is quite impossible to deal promptly or at length with correspondence.

LODE-MINING.

CARIBOO MINING DIVISION.

Cariboo Gold Quartz Mining Co., Ltd.

Actual milling operations were commenced on January 2nd and have since been carried on continuously; the third gold brick, weighing approximately 1,200 crude ounces, has just been produced, bringing the total production for the six months ended June 30th to approximately 3,000 fine ounces, which is to be regarded as distinctly satisfactory. Limitations of space preclude the possibility of giving any details in connection with the mine. It may, however, be said that present appearances underground are distinctly healthy and exposures of ore gratifying. The management states that the company is now adequately financed, and it is the immediate intention to embark on a more extensive scheme of development than has been followed hitherto. In addition, certain changes may be made in the mill to increase the tonnage milled to 100 tons daily. It is the intention to regard the present mill, however, as a pilot-mill essentially for future guidance as to milling operations, and it is not the intention to increase the milling-rate beyond the figure mentioned, unless and until such increase has been demonstrated to be justified by the development campaign about to be put into effect. The development contemplated will involve an increase of about fifty men to the number now employed, and also the installation of additional power. It is well to bear in mind that the carrying-out of this essentially sound

policy may result in fluctuations in production from month to month in the more immediate future.

This corporation, of which P. Kraft is the resident manager, has acquired the **Newmont Mining Corporation** controlling interest in the properties of Cariboo Consolidated Gold Mines, Limited, specified in the 1932 Annual Report. A 50-horse-power Diesel engine and Holman compressor have been installed on Island mountain, and development focuses mainly on running a crosscut tunnel on a bearing north-west (true) at a point about 80 feet above Jack of Clubs lake to penetrate the downward continuation of the "Johns veins" and for general prospecting purposes. On Proserpine mountain a crosscut 360 feet in length has been run to intercept the vein exposed in the *Forrest* shaft, striking N. 10° E., at a depth of 150 feet below the collar of the shaft. This tunnel has, it is estimated, to be advanced another 150 feet before striking the vein. This corporation has also options on the *Myrtle* and *Morning Star* groups on Barkerville mountain (refer to Bulletin No. 1, 1932) and has opened up several ground-sluices on this property, exposing the vein system to great advantage.

This company has secured options on the *North Star* group, situated on Sugar creek, and also on the *Royal Coachman*, *Duff*, *Discovery*, *Grouse*, *Old Sol*, **Premier Gold Mining Co., Ltd.** *Canyon*, and numerous adjoining claims on Antler mountain. Owing to presence of snow and condition of roads and trails affecting these properties, this company has not at the time of writing been able to commence any active prospecting operations on these properties. The resident manager is Bert F. Smith.

This company has acquired options on an area on the north slopes of Island **Britannia Mining and Smelting Co., Ltd.** mountain: on the *Black Jack* group (see Bulletin No. 1, 1932) and *Wintrip* property on Stouts gulch; on the *Cunningham* group (formerly *Homestake* group) on Cunningham creek; and has staked a large number of claims on Harvey creek. Owing to seasonal conditions, development has been confined to the *Black Jack* and *Wintrip*, on which some tunnelling and diamond-drilling is now in progress. The resident manager is H. F. Eastman.

It will be noted that the holdings of the companies above mentioned lie more immediately adjacent to Amos Bowman's "Line E-F."

This company is developing the *Perkins* group on Burns mountain, near **Burns Mountain Gold Quartz Mines, Ltd.** Stanley (refer to Bulletin No. 1, 1932), and has installed a 50-horse-power Diesel engine and Gardner air-compressor, and is engaged in running a crosscut tunnel at a depth of about 215 feet vertically below the crosscut formerly run. The bearing of this tunnel is north-westerly, and it is estimated by the management that it will penetrate the vein system at a point 1,125 feet from the portal. The present length of this tunnel is 450 feet, approximately. About 18 inches of snow still lie at the elevation of the workings. The superintendent is Angus McLeod.

Other recently incorporated companies in the Barkerville area are: Shamrock Gold Mines, Limited, holding the *Richfield* and *Stedman* groups, bordering property of Newmont Mining Company and Britannia Mining and Smelting Company contiguous to Williams creek on the west, and *Shamrock*, *Progress*, *Campbell*, and *Guyet* groups, which border the property mentioned on the east; *Richfield* Cariboo Gold Mines, Limited, holding the *Williams* group adjoining the *Stedman* group on the south; Cariboo Mountain Gold Quartz Mines, Limited (president, W. A. McKenzie, recently Minister of Mines of the Province), holding property on Cariboo mountain south of Stanley.

QUESNEL MINING DIVISION.

On the *Tredwell* group on Cedar creek, owned by J. Creagh, prospecting operations are being carried out by the Premier Gold Mining Company, Limited.

This property is a new discovery situated on Lot 9686, distant about 11 miles **Big Say.** north of Horsefly, within about half a mile of the Horsefly river, and made by the owner, T. O. Hooker. The mode of mineral occurrence is that of an acid igneous tongue, well pyritized, intruding volcanic rocks of andesitic composition. The latter in places show extensive hydrothermal action and in places are well pyritized. At one point a little chalcopyrite was noted. Unfortunately, assays failed to disclose more than traces of gold and silver, but close prospecting in the region would seem to be well justified.

OMINECA MINING DIVISION.

Among activities in this Mining Division may be mentioned those of W. R. Wilson & Sons on the *Free Gold* group on Dome mountain, near Telkwa (*see* Bulletin No. 3, 1932), and on the *Silver Lake* group, Hudson Bay mountain; those of A. J. MacPherson, H. C. Stratford, G. W. Smith, and associates on the *Gold Brick* group (formerly the *Rex* group, refer to Bulletin No. 3, 1932), near Houston. The manager of Columario Consolidated Gold Mines, Limited, near Usk, informed the Resident Engineer early this spring that it was anticipated that operations would be resumed during the year.

PLACER-MINING.

OMINECA MINING DIVISION.

The placer sections of this Mining Division have not yet been visited this year by the Resident Engineer, but it is hoped that it will be found possible to visit the Manson section during the present season. It is understood that considerable activity is taking place in this section, and that a considerable number of men are prospecting in the McLeod River area and a few are engaged on Lorne creek.

CARIBOO AND QUESNEL MINING DIVISIONS.

Activity is general throughout these Mining Divisions and a very large number of prospectors are in the field. Seasonal conditions are admirably suited to hydraulic mining. Among the larger operations in the Cariboo Mining Division may be mentioned: Lowhee Mining Company, Limited, on Lowhee creek; Barkerville Gold Mines, Limited (the reorganized New Waverly Hydraulic Mining Company), on Grouse creek; Guyet Placers, Limited, on Antler creek; Consolidated Gold Alluvials of B.C., Limited, on Lightning creek, at which deep-lead mining operations have been commenced; Slade-Cariboo Gold Placers, Limited, on Mosquito creek, tributary of Lightning creek, a new enterprise at which hopeful results are being secured; and the operations of C. H. and J. A. McDonald on Swift river (Sauerman slack-line operation).

In the Quesnel Mining Division among the larger operations are those of Bullion Placers, Limited, at the *Bullion* mine; Moorehead Mines, Limited, on Morehead creek; B. Boe on Poquette creek, on Harvey creek, and on Nigger (Pine) creek.

A large number of smaller hydraulic operations are going forward at many different points throughout the Cariboo and Quesnel Mining Divisions and developments of interest are taking place at many points.

SOUTHERN AND CENTRAL MINERAL SURVEY DISTRICTS (Nos. 3 AND 4).

REPORT BY PHILIP B. FREELAND, RESIDENT MINING ENGINEER (HEADQUARTERS, PENTICTON).

INTRODUCTION.

Much activity has prevailed during the half-year ended June 30th throughout the Central and Southern Mineral Survey Districts. This has been principally in connection with gold-mining. Many companies have been formed and have taken over ground in areas that appear to be favourable for finding gold. Besides these, private efforts are being made on the part of those financially able, as well as by prospectors. Most of these sections have been prospected to some extent before, and in some cases production followed. In some instances the operating companies closed down on account of metallurgical difficulties, and in others on account of lack of capital to develop and treat possible large low-grade ore-bodies. If the companies will put the money accumulated into development, there appears to be no reason why the district should not be enriched by several profitable producing mines.

GRAND FORKS MINING DIVISION.

FRANKLIN CAMP.

(See previous Annual Reports.) During the winter months the mill was closed down on account of ore-shortage and winter transportation difficulties, and only exploration and cleaning up the ore in the stopes was carried on. **Union.** Late in the spring milling was resumed and will be continued until the ore broken in the stopes is exhausted. Exploration by drifting and diamond-drilling continues. A well-defined fault was struck in the Nos. 1 and 3 tunnels which has thrown the ground on the strike of the vein downward to the south-west. At present the continuation of the ore, if any, has not been discovered. Numerous flat pre-mineral faults apparently played a large part in ore-concentration. Only barren quartz outcropped above the high-grade ore-bodies.

Maple Leaf.—This claim adjoins the *Union* group to the north and an option was taken by the J. F. McCarthy (*Union* mine) interests. Cross-tunnelling and diamond-drilling failed to produce any ore.

Homestake. An option was taken on this group, situated 4,000 feet west of the *Union*, by the same interests. A shaft was sunk 100 feet and another 100 feet contracted for. Drifts were driven about 100 feet to the south-east and 75 feet to the north-west from the 100-foot level. The shear-zone on this level measures about 20 feet in width and contains variable values in gold and silver which, if continuous, may constitute milling-ore. Diamond-drilling continues on this property and about 1,500 feet of work has been done. A camp has been established and the trail to the claims improved. The ore found is similar to that in the *Union*.

Copper No. 2. This property is situated across the river from old Franklin camp and is owned by Pete Santure *et al.*, of Grand Forks. Some attractive gold values associated with pyrite have been found by the owner in a much-faulted zone in the greenstone close to the granodiorite.

General.

There are many claims held in this camp on which little or no work has been done of recent years. The attractive locations embrace the same formations as those in which the high-grade ore was found in the *Union*. Barren quartz represented the outcrop of the best ore in this camp and more exploration appears to be warranted in other locations where quartz prevails. Every assistance has and will be given to claim-owners in this camp by the *Union* mine authorities in the hope of developing more ore. Outside capital has been noticeable by its absence in this locality of much promise.

PAULSON.

Molly Gibson. A lease to Oscar Anderson has been granted by the Molly Gibson (Burnt Basin) Mining Company, of Rossland, and about a car-load of ore stoped from near the collar of the old shaft. Values of about 1.4 oz. in gold per ton are obtainable in the pyrite-chalcopryrite ore. Mineralization occurs in the replaced limestone-beds. Distance from railway transportation about 4 miles. A 4-foot trail leads to the mine.

Winner-Keno. This group, owned by Sam Bombini *et al.*, of Greenwood, is situated to the south-east of Phoenix. A persistent quartz vein varying from 18 inches to 4 feet has been traced through the group. On the *Keno* there are two veins, one about 3 feet wide and another striking diagonally across it about 1 foot in width. A sample across 2.5 feet at the face of the lowest cut assayed: Gold, 0.10 oz.; silver, 9.5 oz. per ton. A sample 12.5 feet back from the face assayed: Gold, 0.16 oz.; silver, 5 oz. per ton. A specimen 8 inches wide next the hanging-wall of the vein assayed: Gold, 2.20 oz.; silver, 18 oz. per ton. Mineralization consists of pyrite, sphalerite, galena, and chalcopryrite. The country-rocks are fine-grained quartzites. On the *Winner* free gold is found. The strength of the veins and values, although seemingly "spotty," warrant exploration. A road leads to the property.

PLACER.

Some fine rough-edged gold has been discovered in the tributaries of Fourth of July creek. These streams cut the gold-bearing serpentine-belt to the east of Phoenix.

GREENWOOD MINING DIVISION.

JEWEL LAKE CAMP.

Dentonia Mines, Ltd. It has been reliably reported that this company has accumulated sufficient funds to commence operations on the *Jewel*, *Enterprise*, *Ethopia*, *Anchor*, and other claims in the Jewel camp, situated about 12 miles east of Greenwood. The ore occurrences in this camp have been reported upon from time to time in past Annual Reports.

Brooklyn-Stemwinder. This group, situated at Phoenix and owned by R. Forshaw, Greenwood, has been bonded to Vancouver interests. Recent samples taken in the *Stemwinder* "glory-hole" and on the 80-foot level of the *Brooklyn* shaft contained some attractive values in gold in the brecciated volcanics. The continuity and size of the bodies of ore containing gold and silver has yet to be determined before a plant is built. Much development-work has already been done on both these claims in the search for copper ore, mined formerly. This will probably assist future operations.

Golconda. This claim, owned by Ola Lofstad, of Greenwood, is situated to the north-west of Greenwood. A considerable amount of stripping and one shallow shaft has been sunk on a well-defined oxidized quartz vein about 5 feet wide. A sample across the vein assayed: Gold, 0.24 oz.; silver, 0.80 oz. per ton. Two crosscuts have been driven at lower elevations in an attempt to intersect the downward extension of the vein. In one tunnel vein-matter was struck, but it is doubtful until a survey is made if this is the right one. The mineralization is pyrite and arsenopyrite in a quartz gangue. The country-rock is greenstone.

Riverview and Rainbow.—These claims, situated close to Midway, are owned by D. Murray and associates, of Midway. Spectacular values in gold were found by the owners in a mineralized zone in the highly serpentinized dunite.

WALLACE MOUNTAIN.

This area has not been examined this year, but reliable information states that the *Bell*, *Highland Lass*, and *Wellington* mines have been producing steadily and the future of the mines looks bright. The Sally Mines, Limited, with property situated between the *Bell* and the *Wellington*, has recently sold some stock and further development is now proceeding. The possibilities for finding silver-lead ore on this property appear to be bright. It is understood that the *Beaver*, lying to the north-east of the *Bell*, will again be reopened under the management of Angus Davis.

The *Carmi* group, including the *Butcher Boy*, has been optioned by Vancouver interests and the development of the shear-zones in the quartz diorite is continuing satisfactorily. Several shipments of ore carrying gold have been made. (See 1932 Annual Report.)

General.

It is understood that a company has been formed to explore and develop the *Golden Kettle* group near Rhone, on the Kettle Valley Railway, about 20 miles from Beaverdell. These claims have not as yet been examined, but former Annual Reports state that attractive gold values are found in some of the quartz veins occurring in this area.

CAMP MCKINNEY.

Although many claims have been staked and old Crown-granted holdings leased, very little exploration has taken place up to the present. In the past the *Cariboo-Amelia* and *Waterloo* claims produced some gold. The main quartz veins, varying from a few inches to 6 feet and striking in an easterly and westerly direction, can be traced for several miles. Values from 80 cents to \$4 per ton can be obtained in the outcrops beyond the main workings of the past producers. Many other narrow veins strike diagonally across this main fissure and have up to the present received only minor attention. Due to the flat-lying country and heavy drift, prospecting is difficult. The camp as a whole appears to warrant exploration by those financially able to do so. A road and the high-power electric line pass through the camp.

LIGHTNING PEAK.

According to the owners, the Waterloo Gold Mines has been financed, so that further development is possible. At the present time a small crew of men is on the property and the No. 4 tunnel on the *Waterloo* is to be advanced. The holdings of this company have attractions, inasmuch that, as well as the silver-lead replacement-zones, there are several persistent though narrow quartz veins striking at right angles which carry gold. (See former Annual Reports.)

PLACER.

A considerable amount of prospecting has been done on Rock creek and some small segregations of gold found along the rim of the old high channel. It seems probable that interests sufficiently well financed will take over the holdings of the numerous leaseholders and thoroughly prospect the present creek-channel. The operation of the whole creek as one unit offers the best possibilities, and there appears to be a good chance of gold-recovery providing the saturated gravels can be drained.

Some important discoveries of placer gold are reported from Kettle river a short distance below the Vernon-Edgewood road crossing.

OSOYOOS MINING DIVISION.

Hedley Gold Mining Co.—Development was continued in the upper levels of the old mine and some encouragement found by the Mercer interests, who have optioned the property. B. W. Knowles, former mine superintendent, is in charge of the work and Paul Billingsley is consulting engineer.

**Morning Star
(Fairview)
Gold Mines, Ltd.**

This company was formed in May to acquire the *Morning Star* group of eleven claims in the old Fairview camp near Oliver. Up to the present, work done represents the construction of a camp and installation of machinery for development, consisting of an engine-room, 50 by 25 feet; a warehouse, 18 by 30 feet; a blacksmith's shop, 18 by 18 feet; an office, 16 by 30 feet; an assay office, 14 by 20 feet; a cook-house, 20 by 32 feet; a bunk-house, 30 by 32 feet; a dry, 16 by 20 feet; and an ore-bin 30 feet long with sectional chutes. A 60-horse-power Ruston Hornby engine, a 303 vertical compressor, and a 30-horse-power hoisting-engine have been installed. About twenty-two men are working and two shifts will be put on development in the shaft when the water is out. It is the intention of the manager, R. L. Clothier, to ship all ore from development-heading direct to the smelter at Trail. The cost of transportation and smelting will, according to advice, be \$6.10 a ton.

On the south end of the 80-foot shaft-workings the quartz vein has been badly sheared and faulted and it seems likely that the more highly mineralized zone still lies within the hanging-wall to the east. The rich outcrop mined many years ago represented a faulted section of the vein thrown to the west. Farther north, on the 80-foot level, 223 feet long, the vein, though fractured, is intact and is mineralized by isolated segregations and bands of pyrite, galena, sphalerite, and free gold. The main mass of quartz is oxidized in the cross-fractures and, as far as developed, shows low-grade material. Vein-widths vary from 2 to 20 feet, and probably more when the true hanging and foot walls are discovered. In the high-grade sections values reach \$64 in gold, which, it is hoped, may assist in producing over the entire mass sufficiently valuable ore to warrant the installation of a mill.

The shaft, though not dewatered to the bottom, is supposed to have been sunk 330 feet and some drifting done. Another vein nearly parallel outcrops about 200 feet to the east and varies in width from 2 to 10 feet. Some open-cuts and shallow shafts have been sunk on this and attractive mineralizations found. Both veins occur in the schist, strike in a northerly and southerly direction, and dip about 50° to the east. The persistence and widths of the quartz veins warrant development, but much remains to be done before the value of the property is known.

Parvenue.

This group on Oro Fino mountain has been acquired by Penticton interests under the name of the Twin Lakes Mining Company, and a crew of men under the management of M. J. St. Clair is working on the property. Some of the ore taken from the *Summit* claim workings (see Annual Report, 1932) has been put through the mill with encouraging results.

Ore Fino-Independence. Development of these properties, adjoining the *Parvenue* group, is taking place under the management of W. Somerville. According to reports some attractive ore has been found in the winze from the lowest tunnel on the *Independence*. The quartz veins, mineralogy, and geological formations are similar to those found in the Fairview camp and are probably an extension of the same vein system.

GENERAL.

Many claims have been staked and companies formed in the area extending from Oliver to Oro Fino mountain, a distance of 12 miles, on quartz veins in the schistose and granitic rocks. Up to the present these holdings have not been examined. For many years the presence of strong vein systems in this section has been known, but, as many of the outcrops are barren or low grade, comparatively little work has been done upon them. In certain favourable structures exceedingly attractive gold values have been found generally associated with galena, and as often as not the ore-bodies are buried beneath an oxidized overburden. A search for ore, especially where the veins dip into low-lying ground, may be recommended. A strong vein has also been discovered on the east side of the Fairview-Cawston road. Other work consists of prospecting the gold-arsenopyrite veins and lenses adjacent to Hedley and on Sterling creek.

SIMILKAMEEN MINING DIVISION.

This Division has not been visited as yet this year, but according to reports a considerable amount of placer-mining is being done along the Tulameen and Similkameen river and on Siwash and Granite creeks. Favourable reports of placer gold found on the Pasayten river have come to hand. Coal-mining at Princeton received a severe set-back on account of labour strikes, and many new market avenues were closed on account of the inability to fill orders.

VERNON MINING DIVISION.

A particularly interesting placer discovery has been made about 12 miles from Kelowna, several hundred feet above and on the east side of Woods lake, close to the Winfield Lumber Company road, of what appears to be an old channel. Indications of well water-worn pebbles, mostly quartz, have been found over $1\frac{1}{2}$ miles in length, 1 mile in breadth, and possibly 100 feet deep. The entire partly cemented mass is covered by basalt. On the south end glacial action has evidently eroded away the old river-bed and the pebbles are strewn along the hillside. Very little can be said at present as to the actual worth of the deposit, because practically all exploration has been done on the western slope of the mountain, where the force of the basalt has split and pushed the bed downhill. Two tunnels have been driven, one about 200 feet long and the other 300 feet, and 50 feet lower, close to the monzonite bed-rock. The owners, John Eley and James Hall, of Winfield Lumber Company, Rural Route 1, Kelowna, have been excavating the lower tunnel-floor 7 feet to bed-rock and recovering attractive placer gold. Samples taken from the floor to the roof of the tunnel, about 6 feet above bed-rock, assayed from 25 cents to \$1.53 per ton in gold. There is a large quantity of garnet sand but no magnetite. The gold is well worn. Further work is necessary to prove the deposit and whether or not values extend over minable widths from bed-rock. The latter still dips slightly to the east and north in the lower tunnel, which may mean that the centre of the channel has not been reached.

Along the west side of Okanagan lake, near Ewings Landing, the Pre-Cambrian Mines property is being developed by Seattle interests, and it is understood the shaft will be sunk farther and exploratory drifts driven from it. On the *Skookum* group, near the north end of the lake, W. Armstrong and associates are sinking on a strong quartz vein series where some high-grade gold ore has been found. West of Wilson Landing, Kelowna interests have uncovered some likely looking quartz veins and development is proceeding.

MONASHEE MOUNTAIN.

The old properties of the Fire Valley Gold Mines, Limited, and the New Monashee Mines, Limited, situated about 47 miles east of Vernon, on the Vernon-Edgewood road, have been cleaned out by Alec Smith and J. T. Mutrie, of Vernon, and the property thoroughly sampled. Several tunnels, open-cuts, and upraises have been driven on a persistent quartz vein from 6 inches to 6 feet in width in the volcanics and argillaceous rocks. Mineralization consists of

pyrite, galena, and chalcopryrite and is said to contain gold values. The Fire Valley Gold Mines, Limited, lies on the west side and the New Monashee Mines on the east of the road. Two small mills were built many years ago, but have since been dismantled.

Discoveries of ore have been reported from Deep creek, which flows into the west side of Okanagan lake.

PLACER.

Many prospectors, mostly unemployed, are obtaining a living on Mission creek and several of the tributaries of Cherry creek. These creeks were mined in the sixties and only the deep gravels and occasional small areas overlooked remain.

NICOLA MINING DIVISION.

This company has taken over the holdings of the Big Canuck Mines, Limited, including the *Planet*, *Donohoe*, and *Joshua*, and in all embracing twenty-five claims near Stump lake. The compressor plant has been reconditioned and a new compressor installed at the *Joshua* shaft. The mill will not be operated until extensive development has been done underground and tonnage possibilities of the *Joshua*, *Planet*, and *Donohoe* veins explored. Under the management of Geo. A. Shaw, consulting engineer, and Major Moon, the *Joshua* shaft will be sunk from the 400-foot level to the 1,000-foot, and a crosscut probably driven to intersect the two other veins, upon which a considerable amount of development has been done. Vein-widths so far developed vary from 4 to 46 inches and values from \$2 to \$20 per ton in gold and silver. The ore-minerals are pyrite, galena, chalcopryrite, and free gold. The country-rocks are represented by the Nicola series and include various types of volcanics, greenstones, etc.

Jennie Long. This group, situated across Stump lake from the Nicola Mines, is being developed by Calgary interests under the supervision of E. W. Watson, of Calgary. Numerous open-cuts and shallow shafts have uncovered a similar series of veins as those occurring on the south of Stump lake. One shaft sunk 70 feet, and full of water when examined, evidently developed some attractive ore containing gold. According to the owners, 4½ feet of mineralized quartz, averaging \$30 per ton in gold, was found. Living-quarters and a new head-frame were in course of construction.

Gold Reef Mines, Ltd. This company has staked a large group of claims adjoining the Nicola Mines and Metals property to the south-east, and, although not examined, it is understood that some quartz veins were formerly discovered on some of the property held. The area embraces the Nicola series of rocks, in which gold-bearing quartz veins may be looked for. In the prospectus printed by this company, reference is made to the operation of the Nicola Mines and Metals Company and the statement made that its modern mill will soon be in operation. According to the management of the Nicola Mines and Metals Company, the mill will not be operated until sufficient ore has been blocked out to warrant it. At present any one of the three veins is generally too narrow and often too low grade to be considered commercial. By combining the product of all three quartz veins sufficiently high values and widths may be obtained; hence their development programme. It is not the intention to depreciate the holdings of the Gold Reef Mines, Limited, because the area held is attractive and worthy of exploration, in the hope that vein-widths and values may be found that will justify the installation of a reduction plant.

PLACER.

Some work has been done near the confluence of Spius (Petit) creek and the Nicola river by the Porter interests. The shafts sunk were filled with water at the time of examination, but the sand excavated was piled near by. According to the management, 1 cent a pan was obtained from this material. Check samples did not substantiate this and only traces in gold and platinum were found.

KAMLOOPS MINING DIVISION.

Vidette Gold Mines, Ltd. This Vancouver company holds twenty-two claims in the Vidette Lake area, about 45 miles north of Savona, which were taken over from B. Sterrett, of Kamloops, and associates, early in the year. A camp has been established on the shore of the lake and full equipment is being installed to enable the company to thoroughly explore the vein system at depth. A small pilot-mill is also being operated

on part time in conjunction with development. At present one vein has been traced for about 1,000 feet on the surface. A considerable amount of drifting has been done on this vein and a winze sunk 78 feet at a point about 300 feet from the portal of the upper tunnel. Drifts have been driven 115 and 150 feet respectively from the bottom of the winze. Vein-widths in the upper workings vary from 7 to 20 inches and average about 10 inches. Values vary from 0.24 to 1.60 oz. per ton in gold. In the lower levels the vein appears wider and reaches 37 inches in places. There has been some duplication of vein-width owing to shearing. Values also increase. Mill-heads average about \$19 per ton. The mill flow-sheet consists of crusher, ball-mill, classifier, blankets, amalgam-barrel, plates followed by a jig-table of unknown design. H. A. Rose is in charge and Gordon F. Dickson is consulting engineer.

Numerous other vein and mineralized outcrops have been found on the company ground and some free gold panned. The veins are found in the Nicola series of rocks described by Dr. Dawson, and resemble the Stump Lake occurrence, with the difference that the gold is found associated with telluride (petzite) and there is no galena or sphalerite present. Across the lake, what appears to be a continuation of the main vein is being developed.

These claims adjoin the *Vidette* to the north-east and are being developed **Sylvanite Mining and Development Co.** under the management of Henry M. B. Inglis, Vancouver. Similar conditions prevail on this ground as that found on the *Vidette* and several quartz veins carrying gold invade the area. A crosscut tunnel (elevation 2,750 feet) 40 feet long is being driven to tap the downward extension of the outcrops (elevation 2,950 feet). The ore-minerals are pyrite, chalcopyrite, galena, and telluride. Four men are employed under Ed. Erickson.

The whole of this area is an interesting one, inasmuch that high gold values can be obtained in many sections. At present any one vein-width is generally too narrow to permit profitable mining, but should a series of them be found the possibilities appear to be excellent. In the *Vidette* workings an increase in width and values at a comparatively shallow depth is very encouraging.

Sharp. This group, situated about 4 miles up Criss creek from its junction with Deadman creek, is owned by H. C. Sharp, A. McDonald, and associates, of Vancouver. Development consists of numerous cuts and short tunnels over a wide area, in which there are segregations and fractures containing cinnabar (mercury). Other minerals found are orpiment, realgar, stibnite, pyrite, azurite, and malachite in a gangue of calcite quartz and chalcedony. The area has possibilities of a large low-grade tonnage of mercury.

The operation of the sodium-carbonate lake deposit close to Cherry creek continues and shipments are being made to Vancouver. Arrangements are being made to work the sodium-sulphate lake, which lies a short distance from it. The Basque salts deposit near Basque is also being operated.

PLACER.

In many of the tributaries of the North Thompson river, such as Lain, Jameson, and Louis creeks, placer-miners are having success. Some interesting finds have been made about 5 miles up on Scotch creek, which flows into Shuswap lake. Close to the highway, a few miles north of Spences Bridge, some coarse gold has been recovered close to the surface. It seems likely that the Thompson river at one time flowed behind the point to the north of this ground and the gravel is part of the old channel. No work was being done after extensive exploration in the Hollywood Placer ground on the Thompson river. Strata of sand through the gravel contained a considerable quantity of fine gold. All equipment for operation is on the ground. Due to high water, only minor operations are taking place along the Fraser river. At Kanaka efforts are being made to locate some high-grade gold quartz which was mined many years ago.

CLINTON MINING DIVISION.

The chromite-deposits on Bonaparte river a few miles north of Clinton are being successfully developed by G. Mackay and associates and some high-grade material found. In the gravel on Big creek, which flows into the Chilcotin river, gold and platinum have been discovered. There was too much snow near the headwaters of Churn creek which prohibited the miners from working until lately. Specimens of placer gold brought in last year were attractive and some production may be looked for. On Watson Bar creek gold quartz in place has been reported.

YALE MINING DIVISION.

The mines in this Division have not been visited this year, but it is understood that developments in the Coquihalla are progressing favourably and some shipments made from the *Dawson* mine. Numerous inquiries have been made in regard to the placer possibilities on the Coquihalla river, and it seems likely that an operation of some size may result. The Consolidated Mining and Smelting Company is reported to be still churn-drilling the Skagit River area, and assessment-work is being done by this company on the *A.M.* group.

POISON MOUNTAIN CREEK AREA, BRIDGE RIVER AND CLINTON MINING DIVISIONS.

REPORT BY A. M. RICHMOND, ASSISTANT RESIDENT MINING ENGINEER, VICTORIA.

Placer gold was discovered in Poison Mountain creek late in the summer of 1932 by an Indian sheep-herder's wife, Julian Fenton, and before the season closed the creek had been staked from source to outlet, over seventy placer claims covering the 3.5-mile length of the stream. It was not possible to visit and examine the area until late in June of 1933, when the writer spent several days on the creek and in the contiguous areas on Quartz mountain, Watson Bar and French Bar creeks. The brief notes given below describe the areas and their possibilities.

ACCESSIBILITY.

Poison mountain is situated at the headwaters of the Yalakom (North fork of the Bridge river) river and Churn creek. In air-line distance it is 23 miles due west from Big Bar Post-office and 25.5 miles N. 41° W. of Moha Post-office. Poison Mountain creek has its source on the west slope of the mountain and flows in a south-south-westerly direction for 3.5 miles, where it joins Churn creek, here flowing in a westerly direction. Churn creek flows generally north by north-east and joins the Fraser river at the Gang Ranch Post-office.

The shortest trail into the area, 37 miles in length, is by way of Big Bar and the North fork of French Bar creek, but high elevations along the trail (4,000 to 6,900 feet above sea-level) prevent access to the area much before the first week in June. The trail from Moha up the Yalakom river is about 50 miles long, but follows stream-grade up to near the head of the Yalakom and crosses over a divide of not more than 6,000 feet elevation, to drop into Churn creek near Poison Mountain creek. This trail is being repaired by the Department of Mines at the present time. An alternative route into the area is by way of Ward creek and the South fork of French Bar creek. This route is longer than the North Fork trail and the trail not as good, requiring several hours more time for the trip from Big Bar.

GEOGRAPHY AND GENERAL GEOLOGY.

Poison mountain rises to an elevation of 7,650 feet above sea-level and is the source of Churn creek and several of the headwater tributaries of the Yalakom river. The country to the west and north stretches out for several miles in a series of rounded hills to the rugged peaks of the Taseko country, while the area to the south and south-east is one of rugged snow-clad peaks, here called the Shulaps mountains.

The stream-valleys are young and of characteristic V-shape. Poison Mountain creek in its 3.5-mile length drops from 6,900 feet to 5,440 feet elevation, the upper 2.5 miles averaging slightly over 8 per cent. gradient. The lower mile of the creek has a grade of approximately 3.5 per cent., and in this flatter section the sharp V-valley of the upper 2.5 miles widens to form a meadow approximately 600 feet wide in its widest part.

The general geology of the area has been briefly described by J. D. MacKenzie in Part A of the 1920 Summary Report, issued by the Geological Survey of Canada. On Poison Mountain creek and on its upper end are to be found outcropping massive thick-bedded coarse boulder conglomerates which are interbedded with fine-grained feldspathic sediments and argillites. In the lower section of the creek the rocks are mainly a coarse feldspar "bird's-eye" porphyry which is occasionally cut by narrow pyritized stringers of quartz. To the south of the area,

approximately 5 to 7 miles, are found outcroppings of massive hornblende diorite in contact with blackish-green serpentine. Small stringers of quartz mineralized with pyrite and said to contain gold values have been discovered, but these were covered with snow at the time of examination and consequently could not be seen.

PLACER GOLD.

Placer gold in Poison creek occurs at and in the bed-rock cracks of the present stream-bed, with occasional remnants of an older and slightly higher narrow channel carrying some values. The gold would appear to be local in origin, there being a complete absence of glacial debris in the stream-valley, the bed-rock boulders being composed for the most part of boulders eroded from the coarse conglomerate and the argillitic shales. Several narrow stringers of pyrite interbedded with the sediments have been located in the rather limited amount of bed-rock so far exposed.

The overburden varies from 2 or 3 feet at the upper end of the stream to possibly 20 feet at the outlet into Churn creek. At a point a short distance above the meadows referred to a cut down to bed-rock showed an overburden of approximately 10 feet. Water is not plentiful, and while a small amount of ground-sluicing is possible during the first month of the season, it is only possible to count on sufficient water for small shovelling-in sluicing operations during the remainder of the season, which here starts about the middle of June and finishes, late in September.

The placer gold so far recovered will not aggregate more than \$300 all told, the largest nugget being valued at \$1.85, with one or two more worth \$1 and several 30- to 50-cent pieces. It is rough and of a dark bronze-golden colour and is worth approximately \$17.50 per ounce (as near as could be ascertained from several of the miners' returns). There is very little flour-gold found, most of the pieces having a value of 1 cent or more and up to the size of rice.

PLACER-WORKINGS.

When the area was examined there were fifty-eight people working on the creek, in several instances in groups of seven and eight claims. All operations were shovelling-in with small sluice-boxes (12 inches by 12 inches by 12 feet), on a 6-inch-to-the-box grade, made from locally whip-sawed spruce lumber.

On the "Discovery" claims owned by D. Jones and W. Holt, as a result of sluicing from bed-rock, about \$50 in gold had been recovered to the date of examination. The bed-rock in this case is smooth and the gold occurred in patches. On G. Simpson's group of three claims approximately \$85 to \$90 has been cleaned up from their bed-rock cut in the stream-bed, the cut averaging 12 feet wide, with an overburden of 6 feet. Smaller amounts have been recovered from E. W. Borin's group of claims, Olson Bros.' group, and R. Butler's property just below the mouth of Poison Mountain creek, on Churn creek.

CONCLUSIONS.

The opinion was reached from an examination of the six bed-rock cuts on the creek, and from a study of the values recovered to date, that the creek will not be a bonanza in any sense of the word. Conversely, it is expected that favourable bed-rock conditions, particularly where the argillitic shales cross the stream-bed, will result in small wages being recovered from the gravels in parts of this stream. It is emphasized that all the available ground on Poison Mountain creek is staked and held in good standing, and outsiders will have to confine their prospecting to the other creeks of the area, principally the small headwater tributaries of the Churn.

With reference to lode-prospecting, the area is not particularly favourable, except to the south-east of Poison mountain in the vicinity of Dog mountain and between there and the headwaters of Watson Bar creek, in which very good poor-man placer-diggings have been worked in past years. The rocks in this area are for the most part old altered highly metamorphosed sediments, principally argillites and limestones, with intrusions of hornblende diorite and gabbro.

Recent activity at the head of Watson Bar creek has led to the examination of W. Trimble's *Astonisher* group and to the staking of the *Shamrock* group by Chisholm, Webber, Daly, and associates. On these groups narrow high-grade stringers ($\frac{1}{2}$ to 3 inches in width) of rusty quartz in the argillites have been prospected.

EASTERN MINERAL SURVEY DISTRICT (No. 5).

REPORT BY B. T. O'GRADY, RESIDENT MINING ENGINEER (HEADQUARTERS, NELSON).

INTRODUCTION.

Since conditions were described in the Annual Report for 1932 an appreciable improvement has been noted in regard to employment, chiefly due to new gold-mining activities. The various areas of gold occurrences in District No. 5 are being investigated more thoroughly than ever before and promising prospects are in great demand. A gratifying feature is the provision of capital, assuring adequate funds for proper development programmes in advance of production. Renewed interest is gradually developing in connection with silver-lead-zinc mining, as, for instance, the recent press announcement that production from the *Monarch* mine near Field is to be resumed by the Base Metals Mining Corporation. At the *Sullivan* mine of the Consolidated Mining and Smelting Company operations are being conducted six days a week as compared with the previous scale of alternate four and five days a week. This company is also providing additional employment through resumption of work at its phosphate properties in the Crowsnest Pass area. The following notes deal with lode-gold mining, except for a brief reference to placer-mining, which was dealt with in Bulletin No. 1, 1933. All the properties mentioned have not been visited during the period under review, due to pressure of other duties, so that details in several cases are lacking. In addition to those specified, numerous activities are under consideration.

Employment for at least 250 men is being provided by gold-mining activities near Nelson, Ymir, Salmo, and Erie. Crews in several cases will be added to and new ventures under consideration will no doubt furnish additional employment.

NELSON MINING DIVISION.

In the immediate vicinity of Nelson crews of men are employed at the *Granite-Poorman* properties of the Livingstone Mining Company, where H. R. Smith, of Vancouver, is understood to have secured development capital from Seattle interests; at the *Athabasca-Venus-Juno* properties, where P. Lincoln, for the Noble Five Mines, Limited, is carrying on drifting operations to develop ore in the *Juno* workings, and surface-trenching, preparatory to tunnelling, on the *Athabasca*; at the *Perrier* mine, where D. Berry, of Nelson, and associates have taken over the lease; and at the property of the recently incorporated Humming Bird Gold Mines, Limited, from which a trial shipment of 26 tons was made in April.

At the *Iron King* prospect near Beasley, west of Nelson, a start has been made by C. C. Starr, mining engineer representing Vancouver interests. The property is considered to have possibilities for a large tonnage of low-grade gold ore, the values being associated with seams of pyrite in extensive showings of magnetite. The deposits occur in the Rossland volcanics adjoining the Nelson batholith. About a dozen men will be employed.

In the Ymir camp substantial shipments are being maintained by E. P. Crawford at the *Yankee Girl*. At the *Goodenough* J. F. Coats, of Vancouver, has installed compressor equipment and good progress is now being made in driving the No. 3 tunnel to test the downward continuation of the ore-bodies below the No. 2 working. At the *Ymir-Wilcox* D. Norcross and J. J. Cullinane, of the Wilcox Mining Syndicate, have resumed work with seven men in the mine and mill. East of the *Yankee Girl* preparations are being made by J. L. Parker, representing the Two Star Mining Company, of Vancouver, to sink the 90-foot shaft to an additional depth of 200 feet. This work is to be financed by A. B. Trites, of Vancouver. At the *Boulder City* group near Salmo, L. R. Clubine, representing the Clubine-Comstock Gold Mines, Limited, has installed a small compressor with which development will be speeded up. In the Sheep Creek gold camp much activity is in evidence. At the *Reno* property of the Reno Gold Mines, Limited, about eighty-five men are employed under I. M. Marshall, the new superintendent. Production for the period since the mill was started up in December has gradually been increasing. Considerable dilution occurs in mining the vein, which is difficult to sort and is frozen to the wall-rocks, thus reducing the values of the mill-heads. The ore is washed and waste sorted out by two men in the primary crushing-house at the mine. The No. 5 level, being driven on the newly exposed ore-shoot, is in over 1,800 feet. On June 23rd the last 125 feet was in a shoot of ore, the easterly part of which is high grade according to the company's assay-plan. The ore here is about the

usual width, being 16 inches wide in the face. Vein-widths from 4½ to 5 feet, with good assays in places, were encountered in the winze, 30 feet down on the date mentioned, being sunk opposite a point between the 512 and 515 stopes. Of eleven or twelve rock-drilling machines, one is in use sinking the winze, one in the face of No. 5 level, and the remainder are in stopes on the Nos. 4 and 5 levels.

A recent press announcement concerning the "Fawn Mining Company" indicates a new activity in connection with the long-dormant *Fawn* gold prospect adjoining the *Reno* property to the east. This new venture is sponsored by W. R. Hunter, of Nelson; Dave Lougheed, of Vancouver, and associates. The last mentioned has had a few men prospecting the *Lucky Boy* group, adjoining the *Arlington* property near Erie.

At the property of the Gold Belt Mining Company, Limited, the crosscut tunnel on June 23rd was in 1,055 feet and is expected to cut the interesting "C" vein in a short distance. The *Bruce* vein was cut at 764 feet and drifted on about 40 feet in both directions. In these workings this vein is up to 2 feet wide with spotty values. The formation here is argillaceous schistose rock and not the favourable hard quartzite in which the better ore-shoots occur. Good progress is being made in driving this tunnel, the footage in May being 306 feet. At the property of the newly incorporated Golden Belle Consolidated Mines, Limited, nine men are engaged in erecting camp and making trail to connect with the *Gold Belt* tunnel camp and in surface work preparatory to tunnelling. H. Lakes is resident engineer in charge of both *Gold Belt* and *Golden Belle*.

At the property of the Kootenay Belle Gold Mines, Limited, drifting and stoping operations have been maintained with shipments of crude ore to the Trail smelter. E. P. Crawford, of Nelson, has been appointed consulting engineer. Expanding activity is in evidence at the *Queen*, where C. E. Witter, of Moscow, Idaho, has installed a flotation unit and additional crushing equipment in the mill to provide for a 25-ton daily capacity. The *Vancouver* property, owned by F. Unfried, of Nelson, is being worked by lessees who are shipping at intervals.

Near Erie substantial activity has been renewed at the *Second Relief* mine by W. N. O'Neil, of Vancouver. W. G. Norrie-Loewenthal is in charge and development is to be vigorously prosecuted.

At the *Keystone* activity has been resumed by S. D. Osborne, of Spokane, and the feasibility of shipping sorted ore to the Trail smelter is being tried.

At the *Wisconsin* property on Midge creek, west side of Kootenay lake, preparations for development and diamond-drilling are being made by E. P. Crawford and F. R. Weekes.

TRAIL CREEK MINING DIVISION.

Near Rossland the activities by leasers is being continued, as stated in the Annual Report for 1932. From the *I.X.L.* shipments of high-grade ore are being maintained. The success attained in this case has stimulated exploration in the adjoining area and new leasing activities are being undertaken. Employment for its Rossland miners is being provided by the Consolidated Mining and Smelting Company through the giving of leases on the outcrop and superficial workings of the company's mines at Rossland. Work has been resumed at the property of the Velvet Gold Mining Company, 12 miles from Rossland, after a shut-down owing to the deep snow conditions last winter.

LARDEAU MINING DIVISION.

The operation of the Meridian Mining Company is stimulating active investigation of prospects in the Camborne camp. This company commenced development in February at its *Oyster* property, where drifting on Nos. 1 and 2 levels has been in progress. A. G. Langley, consulting engineer, and H. Warren recently commenced a comprehensive examination of the company's holdings. Hitherto the extensive underground workings on the *Eva* property have not been accessible for inspection, due to caving at the portals of some of the tunnels.

ARROW LAKE MINING DIVISION.

In the vicinity of Mineral City, near Burton, an exceptionally interesting operation is to be undertaken at the *Millie Mack* gold-silver property, with A. W. Davis, consulting engineer, in charge. This property is credited with past shipments of over 400 tons of high-grade gold-silver sorted ore. The major objective, however, is the development of tonnage of milling-ore, for which the property, still in the prospect stage, has the earmarks of important quantity.

REVELSTOKE MINING DIVISION.

A start has been made at the *Roseberry* gold prospect, on the North fork of Carnes creek, by A. Johnson and associates, of Vancouver. Investigation of the interesting gold occurrences in the Carnes Creek area, such as the *J. and L.*, are temporarily handicapped by wash-outs on the Big Bend highway, which is blocked beyond Mile 14.

PLACER-MINING.

Conditions are much as described in Placer-mining Bulletin No. 1, 1933, except that activities are increasing in the East Kootenay, notably on Wild Horse creek and Perry creek. In connection with Wild Horse creek, it should be recorded that the Keystone-drilling done on the delta in 1932 by E. W. Watson and J. R. Finley on behalf of V. W. Parrish and associates, of Medicine Hat, has been found to be utterly unreliable; also that no commercial values as represented in the written report of E. W. Watson were found. In connection with the report quoted, gold was produced by E. W. Watson for thirteen holes, but reliable evidence indicates that some of the holes were never panned.

WESTERN MINERAL SURVEY DISTRICT (No. 6).

REPORT BY GEORGE A. CLOTHIER, RESIDENT MINING ENGINEER (HEADQUARTERS, WORKMEN'S COMPENSATION BUILDING, VANCOUVER).

A review of mining operations in this district for the first half of this year will necessarily be brief, for the reason that snow conditions, particularly in the Bridge River area, has not permitted much work being done, except on the two producing properties. In fact, several of the higher properties have only recently established camps. Cadwallader creek, where probably the greatest mining interest is centred, is 4,000 feet elevation at the *Pioneer* mine.

There is considerable mining excitement throughout the Province due to the success of the Bridge River, Cariboo, and Nelson gold-producing areas, and as a result a great many syndicates and private and public companies have been incorporated. Treasury stocks have been eagerly bought by the public, and in the majority of cases the companies are satisfactorily financed to carry out sufficient development-work to prove or indicate the possibilities of the property, if properly administered. There should be a strict accounting of these treasury funds.

There would be a much closer investigation of companies and their properties, resulting in much more reasonable and considered buying of treasury shares, if the public realized that there will inevitably be a lot of worthless stock certificates for decorative, rather than remunerative, purposes, unless these properties are brought into profitable production. Many prospects will be "called," but few will be chosen. Many "strikes" are being reported by promoter-operators whose chief knowledge of mining is the stock-board.

It is remarkable that the wide distribution of gold throughout the Province was not realized until the past year or two. So far this year there is more prospecting than for many years, and it is certain that development of gold properties will be the greatest ever.

VANCOUVER ISLAND.

Vancouver island is getting a fair share of mining attention this year and the outlook is rather promising. Considerable prospecting and claim-staking has been done in the Leech River area. I have not been in that area this year, but reports are heard of fairly wide, well-defined quartz veins in sedimentary formation, carrying low-grade gold values on the surface.

The trail from Shawnigan lake up the Koksilah river has been cleared and continued through to the head of the San Juan river. A number of prospectors are in that section this season.

Placer-ground has been staked on Wolfe creek, on Muir creek, at the mouth of Jordan river, and farther north on the coast at the mouth of Sombrio river. Fairly coarse gold is shown from these localities, but whether they can be profitably worked remains to be seen.

On Alberni canal work has been resumed on the W.W.W. group, with Alex. Robinson in charge of operations. The old claims, *Warspite*, *Victoria*, and others, at the head of China creek

have been acquired by Vancouver interests and preliminary work started. Work is proceeding on the sinking of the shaft on the *Leora*, in the Kennedy Lake area. The *You* group on Bedwell river, up from the head of Bedwell sound, is now under operation by J. B. Woodworth, of Vancouver. He states that the small gold-mill on the property has recently been started and is making satisfactory recovery.

On Herbert arm there has been considerable activity this season due to the discovery of gold-bearing quartz veins in the vicinity of the head of the arm. Many claims have been staked, but sufficient work has not yet been done to demonstrate the importance of the veins. Wm. Gibson, of Matilda Creek, has two groups under option and several other bonds have been taken by Vancouver men. The main showing so far, I understand, is a 4-foot vein of quartz at the water's edge assaying \$16 in gold per ton. The quartz is very sparingly mineralized with iron sulphides, galena, and zinc-blende, with free gold showing in places. Sulphide concentrates from panning assay very high in gold. The country-rock is apparently andesite. This area will be examined later.

Farther north the Zeballos River area is undergoing some mining this year. The report of H. Gunning in the Summary Report, 1932, Part A II., favourably comments on the area for prospecting. The *Tagore* group has been taken over by Conrad Wolfe, of Seattle, but so far very little work has been done toward any important exploration.

The *Marks* property, about 7 miles up from tide-water, had considerable development-work done last year, and I am informed that a contract has been let for 200 feet of further underground work. The trail from the beach to *Marks* camp is being repaired with a small appropriation from the Department of Mines.

MAINLAND COAST AND ISLANDS SECTION.

This section is showing the effects of the interest in gold properties. In the Shoal Bay area work is being done on the *Julie-Enid* group under the direction of R. Crowe-Swords. As yet the work is practically on the surface, but very encouraging gold values are being found, giving this property, in its situation between the *Alexandria* and *Doratha Morton*, distinct possibilities. Depending on results on the *Julie-Enid*, the old *Doratha Morton* will probably have some further work done on it this year. As yet the *Alexandria*, now controlled in the East, has not been reopened. On Thurlow island the *White Pine*, *Thurlow Gold* (reorganized), and *Douglas Pine* have prospects of further development. The old *Blue Bells* property on Frederick arm is also under development again.

Farther up the coast, on Loughborough inlet, the Hayden Bay Gold Mines Company has been incorporated to continue the development of its property on Hayden bay. Encouraging results have been obtained by hand-work.

On Texada island prospecting-work is being continued by O. B. Bush. R. Logan, owner of the *Gem* group, which is equipped with a small gold-milling plant, compressor, and hoist, is arranging to dewater the mine and proceed with more underground exploration. The mine was opened to 150 feet depth by two levels, from which some very nice gold ore was taken. I think the property well deserves further investigation.

Work has been carried out on the property of the Lasqueti Mining Company on Lasqueti island, under option to the Pacific Gold Mines, Limited, of Vancouver.

The Britannia Mining and Smelting Company, on Howe sound, has been operating on a much reduced scale, both in underground work and milling. The output for the first six months of the year was considerably lower than in the first half of 1932. A new departure was the recovery of a substantial tonnage of zinc concentrates in the mill. The company is very active in the field under the supervision of V. Brennan. Extensive holdings have been acquired in the Cariboo field.

In the interior, in the Harrison Lake, Fire Mountain, and Lillooet River areas, several old properties have been taken over and work is getting under way.

The Harrison Lake Goldfields, Limited, acquired the old Whittaker-Wright property on Silver creek, on the east side of Harrison lake. I understand that a considerable amount of work has been done and the present company proposes to extend the old workings. No information is at hand as to the results obtained.

The Fire Mountain area is reached from Tipella, on the west side of Harrison lake, near its head. The trail was cleaned out a year ago to Fire lake and beyond to the summit. Rich

specimens of gold ore have been brought out from this area for many years and it was pretty thoroughly staked in 1898. Interest has renewed this year and Vancouver interests have taken over several of the old properties, including the *Money Spinner*. This property had several hundred feet of drifting on a well-defined quartz vein and a small mill erected for the treatment of the ore, which was not operated to any extent. It is hoped that this area will have a thorough investigation. The *White Star* group, an old property situated just south and east of Lillooet lake, has been bonded for further work.

The country contiguous to the Pacific Great Eastern Railway is very active, and the fact that the railway has made an operating profit for the past several months is indicative of the great mining activity in that belt. Up from Squamish, the coast terminal of the Pacific Great Eastern Railway, work is being carried on in the gold area on Ashloo creek, a tributary of the Squamish river. Last year the *Golden Coin* group shipped 5 tons of \$80 gold ore, which indicates possibilities and has interested several in that area.

Farther up the railway, at Brandywine creek, the Blue Jack Mines, Limited, is continuing the development of the group of that name described in past Annual Reports. Two other groups in that vicinity—the *Astra*, owned by Price and Falconer, and the *Brandywine*, owned by Wm. Barclay—are being developed by the owners.

LILLOOET MINING DIVISION.

This Division, traversed by the Pacific Great Eastern Railway, is having the greatest gold-mining activity in its history and this year will be the largest gold-producing Division in the Province. Up to the end of June this year there had been the unprecedented number of 2,000 claims staked and recorded. Judging from the intense interest being taken, it looks as if a much greater percentage than usual of these claims will be actually prospected and developed this season. Of course, hundreds of these claims have been staked not for the mineral possibilities, but for the sole purpose of selling them to some mining-company promoter, who in turn allows the public to get in on the ground floor.

Appreciation is due the Geological Survey of Canada for the continuation of the survey this year, under J. F. Walker, from the head of Cadwallader creek down McGillivray creek to Anderson lake and west to the Birkenhead Lake area. The Birkenhead country, reached by trail from Mile 72, or D'Arcy, on the Pacific Great Eastern, is receiving considerable attention, and recent reports state that a large area in the vicinity of Phelix creek has been staked.

There are a number of properties under development on McGillivray creek. There is a good horse-trail to the forks from McGillivray Lodge on Anderson lake, and the Department of Mines has made an appropriation for the continuation of the trail to the summit and over the divide to meet the Cadwallader Creek trail, thus giving a through trail from Anderson lake to the *Pioneer* mine, a distance of about 25 miles.

The National Gold Mines, Limited, acquired the old Anderson Lake Mining and Milling Company's property about $3\frac{1}{2}$ miles up from the Pacific Great Eastern Railway. Considerable work had been done in two tunnels, and at one time a 10-stamp mill was operated. It is stated that between \$25,000 and \$30,000 was produced in the mill from ore taken from the higher-grade parts of the vein. The present company started a lower tunnel in March of this year for the purpose of obtaining sufficient depth on the ore-body to provide tonnage for a mill. The vein is in sedimentary formation and is up to 20 feet in width, averaging probably over 10 feet. The general grade of the ore is low, but rich streaks and pockets are found which it is estimated will make the whole a milling-grade body. There is no doubt that ample tonnage is available and the present work will prove conclusively as to whether or not the values are sufficient for milling purposes. A comparatively low-grade ore could be profitably mined and milled. The property has been equipped with good camps, an efficient water-driven compressor plant, and over 300 feet of tunnel driven under the supervision of Tom Brett.

There are a number of groups above the National Company's property to the McGillivray-Cadwallader summit; in fact, it is staked solidly from the *Pioneer* to Anderson lake. Of these groups, the *Gold Hill* is being developed by Howard Sutherland. On the east end of the group a sparingly pyritized quartz vein has been exposed in three places in the sedimentary country-rock. The cut seen shows the vein-width to be about 35 feet, from which a hammer sample gave \$2.40 gold per ton, which may be considered as very encouraging on the surface. The vein

is being open-cut down the hill to obtain the lowest depth for a tunnel-site. Other quartz-showings are being opened up on the west claims of the group, but were not examined.

On the *Diorite* group, across the creek from the *Gold Hill*, open-cutting has exposed two parallel quartz veins, one about 2 feet and the other about 14 feet wide in a shearing in a diorite stock which plainly intrudes the overlying sedimentary formation. The veins are of white quartz very sparsely mineralized and evidently carrying little or no values. The big vein at least warrants opening up along the surface in the hope of finding an ore-shoot worth developing. Development-work on other groups toward the summit will proceed as snow conditions permit.

The Cache-Bonanza Gold Mines, Limited, has recently been incorporated to acquire and develop the old *Golden Cache* and *Bonanza* properties about 8 miles up Cayoosh creek, which empties into Seton river just west of Lillooet. The truck-road up Cayoosh creek from Craig Lodge at the foot of Seton lake has been repaired up to the pack-horse bridge, about $2\frac{1}{2}$ miles below the *Golden Cache*, making splendid transportation facilities. I am informed that the old tunnel will be continued on the *Golden Cache* and diamond-drilling on both properties is under advisement.

On the lower Bridge river—that is, from Lillooet to the horseshoe bend and up the North fork or Yalakom river—there is considerable prospecting and some development being done this year. The auto-road goes to Moha Post-office, on the Yalakom river, from which point the old trail follows up the river to the Poison Mountain area. With a grant from the Department of Mines, the old trail is being cleaned out and a foot-bridge across the Yalakom river has been built to facilitate the prospecting of a very promising section. A. M. Richmond, of the Department of Mines, reports that the country at the head of the Yalakom and Churn creeks is a promising prospecting section.

The Upper Bridge River area is the hub of activities and the staker (not to be confused with prospector) and the mineral-claim bootlegger are reaping a harvest. What is termed the "diorite-belt," proven to contain profitable gold-bearing veins, is of course the most favourable location for mineral claims. No commercial ore has been developed off this belt as yet; in fact, only a comparatively small area on the belt has proven productive. A large number of companies have been organized and a great deal of money has been raised mainly for properties off the belt, and this season's work will probably tell the story as to whether or not the quartz veins in the Cadwallader and Bridge River formations carry commercial gold values. Too many wonderful strikes that have not materialized have been reported by inexperienced operators to highly experienced brokers.

The report by W. E. Cockfield and J. F. Walker on the "Cadwallader Creek Gold Mining Area," contained in the recently issued Summary Report, 1932, A II., defines the occurrences of the diorite from the *Wayside* on the west side of Bridge river to the *Royal* group near the head of Cadwallader creek, a distance of nearly 20 miles. Croppings of diorite have been reported found 10 miles north of the *Wayside* and some distance south of the head of Cadwallader creek, giving a known length of over 30 miles. This has been entirely staked. Throughout this distance the diorite occurs as masses, tongues, and outcrops varying in length up to $2\frac{1}{2}$ miles and in width up to 1,500 to 2,000 feet. It can readily be seen that along the strike of the belt a very small percentage of the formation consists of diorite. To date about $2\frac{1}{2}$ miles, from the *Bralorne* to the *Pioneer*, have been proven to contain profitable gold-bearing quartz veins; the balance of diorite-outcrops, however, are undoubtedly deserving of thorough, systematic prospecting and development. Off the diorite-masses there is little choice in any of the ground, except possibly where igneous intrusives may furnish more favourable conditions for mineralization. Excepting the *Wayside*, the *B.R.X.*, and the producing properties, the *Bralorne* and *Pioneer*, there has been comparatively little actual mining done. A number of properties are getting up camps, getting in equipment, installing plants, etc., preparatory to extensive development.

The Truax Gold Mines, Limited, has had a small crew on its property on Truax creek all year. Winter conditions for starting development are not very satisfactory and the winter work was therefore somewhat at random. The surface showings indicate two veins, the No. 1 striking diagonally up the hill and the No. 2 converging to No. 1. Considerable hand-work has been done in trying to pick up and trace No. 2 vein on the east side of the creek, and I understand that values so far have not been very encouraging. Though No. 1 vein outcropped on the

creek-bank, it was decided to go up the creek and run a crosscut to it, a distance of over 100 feet. When cut the vein did not show the values obtained from an open-cut on the surface, but drifting on the vein will be carried on. Judging from the reported placer gold found along the creek below the vein and also along the vein-croppings, it would indicate that there are ore-shoots in the vein carrying good gold values. Considerable surface work by way of stripping and trenching should be done as soon as the snow is gone, to obtain some information as to the strike and continuity of the veins, as a guide to underground work. The property deserves some well-planned prospecting and development.

The *Alpha* group, owned by Wm. Davidson, has been bonded to American interests, and I am informed that the *Stibnite* group, owned by L. Turner, has also been sold.

The Wayside Consolidated Gold Mines, Limited, was financed and resumed work early in the year under the supervision of Geo. Bancroft. The camp was enlarged to accommodate twelve to fourteen men and a portable compressor installed. A small surface tram was laid for transporting men and material to the No. 2 tunnel. Three tunnels are now under development, Nos. 2, 3, and 4, the latter at the camp-level. Plans are made for starting a new lower level. To this end a new compressor of 1,000 cubic feet capacity will be installed, electrically driven from a hydro-electric plant situated on Fergusson creek, across Bridge river from the *Wayside*. The right-of-way has been cut and the power plant is now being installed.

Development for some time consisted in the extension of No. 3 tunnel, following the vein, which varied in width up to 2 feet. A few weeks ago this encountered a shearing up to 15 feet wide carrying quartz stringers and assaying from \$2 to \$4 per ton. The main vein at this point was 2 feet wide of around \$20 ore. A crosscut was then driven at a point 40 feet back, showing a wider zone of lower-grade ore. It is reported that subsequent drifting and crosscutting is opening up a very encouraging ore-body in No. 3 tunnel, and that the same body has been found by crosscutting on No. 4 level. Work is now being done in No. 2 tunnel above to prove the continuation of the ore-body to that level. It is a very interesting situation. Some prospecting-work is also being done west of the tunnels on the diorite border.

Owners of the ground north of the *Wayside* have started work on some quartz-showings presumably in the extension of the *Wayside* diorite.

In the vicinity of Gun lake the Cariboo-Bridge River Gold Properties, Limited, has acquired the *Ypres*, *Hillside*, and *W.B.* groups, also the *S.A.T.*, *Sideways*, and *Queen* groups. I am informed that work has been resumed on the *Ypres* group.

North of the *Ypres* promising quartz veins have been found in diorite on the *High Tor* and other groups in the vicinity of Eldorado creek. Sufficient work has not been done to justify an opinion as to their importance, but it carries considerable significance, in that the diorite-outcrops are found that far north.

On the B.R.X. Gold Mines property a tunnel was driven last year over 500 feet on the *California* vein, showing it to be a wide shearing along a tongue of diorite in greenstone. The shearing is in places 25 feet wide, but the mineral-bearing portion will average probably 6 feet in width. The gold values throughout are very consistent, but too low, except possibly for milling on a large scale. This year a crosscut tunnel was started 200 feet vertically lower and driven over 600 feet, encountering the *California* shear, on which subsequent drifting proved it practically the same as in the upper tunnel.

The Bridge River Consolidated Company has done no work on its property this year. It is reported that it has been acquired on a bond by the Consolidated Mining and Smelting Company of Canada, which will ensure its thorough investigation.

The *Taylor* group, situated north of and adjoining the west claims of the *Bralorne* holdings, has been incorporated under the name of the Taylor (Bridge River) Mines, Limited. Ample capital is assured for the extensive development of the property. The group consists of about twenty-two claims and fractional claims, covering an extensive stock of diorite which is comparable with the *Bralorne* formation and indicates rather outstanding possibilities for the property. A large amount of stripping, trenching, etc., has been done by the owner, J. M. Taylor, during the past several years, but owing to the heavy overburden only a comparatively small portion of the diorite has been exposed. In this work two or three quartz veins associated with albite dykes have been uncovered. No depth has been obtained on any of them and the surface values are low. The ground is flat and consequently depth will have to be obtained either by sinking or driving a long crosscut tunnel. The extension of the eighth level of the

Bralorne as a crosscut for 700 to 800 feet would make an excellent entry to the property for deep development.

The *Bralorne Mines, Limited*, with a good organization and strict attention to mining, has this year placed itself in a very solid position. Underground development west of the main fault has opened up a fine body of ore on the eighth and tenth levels. This has been proven to be 400 feet long, averaging from 10 to 12 feet wide, of a good grade of milling-ore, constituting a four-to-five-year ore reserve at the present milling capacity of about 130 tons per day. Crosscutting west of the fault has picked up what is supposed to be the *Wedge* vein, on which subsequent work is said to have indicated substantial ore-bodies and values. Recent work on the surface between the diorite-masses of the *Bralorne* and *Taylor* properties has disclosed a very promising quartz vein of milling-grade ore. Should further crosscutting pick up the *Shaft* vein in the diorite, another important chapter may be written on this property. The production for the first six months consisted of 22,511 tons milled, yielding 11,769 fine ounces of gold.

The *Pioneer* mine has been running to capacity since winter troubles stopped and is producing about \$200,000 per month on a milling capacity of 300 tons per day. The lower levels have been opened up by crosscutting from the shaft to the 1,400-foot level. The ore-body developed on the seventh level east of the fault assures a tonnage of good-grade milling-ore in that section of the property, with plenty of ground east as yet undeveloped. The production of 300 tons per day calls for extensive ore-development to maintain the reserves. During the half-year 44,332 tons of ore and 3,103 tons of tailings were milled, from which was recovered approximately 46,900 fine ounces of gold and 8,850 oz. of silver, valued at \$1,175,250, including premium.

The *Native Son Mines, Limited*, was incorporated in May and acquired the *Native Son* group and the *Peacock*, *Golden Aro*, and *Golden Daisy* claims staked in 1931, situated south-west of the *Bralorne* ground. Additional ground was staked this year. The showings consist of two or three small veins of white, barren-looking lenticular quartz about a foot in width in a schistose rock in the *Cadwallader* formation. Only one open-cut had been put in at the time I was on the property and some stripping farther up the hill. A road is being built from the *Pioneer* power-plant road and a compressor is to be installed. I think the first essential on this property is to thoroughly surface-prospect it and if anything is found, open it up by hand-work to find out if it is worth developing.

None of the properties south of the *Pioneer* have done any extensive work so far this year on account of the lateness of the season. The *Pioneer Extension* had commenced ground-sluicing, but nothing new had been found. Above this, on the *Plutus*, *Dan Tucker*, and *Red Hawk* properties, work is only getting started. Some surface open-cutting has been done on the *I.X.L.* south of the *Red Hawk*. Work had not been resumed on the *Royal* group of the *Cadwallader Gold Mines, Limited*.

Adjoining the *Royal* on the south and extending to the divide between *Cadwallader* and *McGillivray* creeks, the *Standard Consolidated Gold Mines, Limited*, has had a hard struggle in overcoming snow conditions. On June 11th there was about 5 feet of snow at the camp, which was about completed. On the divide where the ore-showings are said to be the snow was much deeper and no examination could be made under such conditions. Sufficient work cannot have been done in 10 to 15 feet of snow to gain much idea of the extent of the mineralization. The trail is being widened and repaired for the purpose of taking in a compressor plant. Twelve men are employed under the supervision of Wm. Sloan.

PLACER-MINING.

This branch of mining is getting under way along the *Fraser* and *Bridge* rivers. Mr. *Nightingale* is putting in a dredging plant of his own design about 20 miles up from *Lytton*. A pump-hydraulicking plant has been started on the benches opposite the town of *Lillooet*. Preparations are under way toward the installation of an hydraulicking plant on ground below *Texas* creek, on the west side of the *Fraser*. It is proposed to flume and pipe the water from *Texas* creek.

The *Lower Bridge River Placers, Limited*, operating at *Michel* or *7-Mile* creek, has been washing for a couple of months. Considerable repairing to the ditch-line and other improvements were necessary in the spring, causing some delay. Two monitors are working in a pit on the east bank of *Bridge* river. The bed-rock, a 6-foot layer of cemented gravel, is about

15 feet above the river at normal water, giving ample grade for sluices. The gravel-bank here is probably over 100 feet high and under the present scheme the top 60 to 70 feet is being piped off for 100 feet or more back from the river. The gravel on bed-rock forms a good slope which facilitates moving the top gravel. Later, when the overburden has been removed, the lower gravel will be moved down to bed-rock. Major Hartley, who is in charge of the work, informed me that the top gravel carries some gold throughout, but no clean-up will be necessary until at least a portion of bed-rock is cleaned, which will probably be early in August. He estimates that they are moving about 2,000 yards per day. The work is going very smoothly.

On Marshall creek, a tributary of Bridge river just above Rexmount, the three Bobs—Miller Bobb, Bob Colvin, and Col. Robt. Warren—are sluicing by means of a "boomer" gate assisted by a small monitor. I have no information as yet as to the success of the work.

On Tyaughton creek the Tyaughton Creek Gold Placers, Limited, has been hydraulicking for a month. Under the supervision of Chris. Beaton, an old Atlin hydraulic man, the plant was completed, consisting of improvements to the flume and ditch-line, completion of the pipeline down to the monitor, and the construction of sluices. I have been informed by the company that a small test clean-up was made which they considered very satisfactory. Farther up Tyaughton creek Grant White is drag-line scraping and sluicing from the bed of the creek made available by diverting the creek-water. I have not heard what results are being obtained.

COAL PRODUCTION FOR THE SIX MONTHS ENDED JUNE 30TH, 1933.

REPORT BY JAMES DICKSON, CHIEF INSPECTOR OF MINES (HEADQUARTERS, VICTORIA).

During the first six months of 1933 coal-mining in the Province showed a considerable decrease compared with the same period of 1932, as shown by the following comparisons. The figures given are in long tons.

The output of coal to the end of June was 592,000 tons, as compared with 808,200 tons for the same period in 1932, a decrease of 216,200 tons. The mines on Vancouver island produced 282,000 tons, as compared with 362,000 tons for the first half of 1932, a decrease of 80,000 tons. The mines of the Nicola-Princeton District produced 89,000 tons, as compared with 102,000 tons for the first half of 1932, a decrease of 13,000 tons; and the Northern District produced 1,750 tons, as compared with 1,200 tons in 1932. The mines in the East Kootenay District produced 219,250 tons to the end of June, as compared with 343,000 tons for the same period in 1932, a decrease of 123,750 tons.

Many of the large mines of the Province have only operated about 60 per cent. of the working-days, and in some cases have divided this time between their employees, the different crews working alternate weeks. There is every evidence for an improvement in the coal industry for the remaining portion of the year. The larger mines on Vancouver island are showing an improvement and Coal Creek Colliery will again be in production for a limited amount. It is hoped that before the end of the year the decrease already shown from 1932 will be mostly overcome.

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