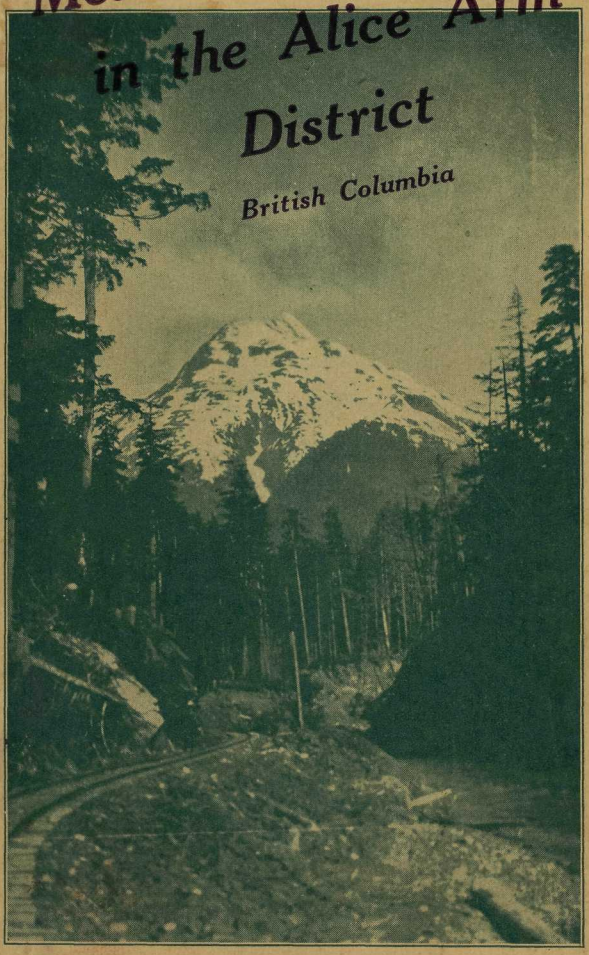
Metalliferous Mining in the Alice Arm District

British Columbia



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General Description

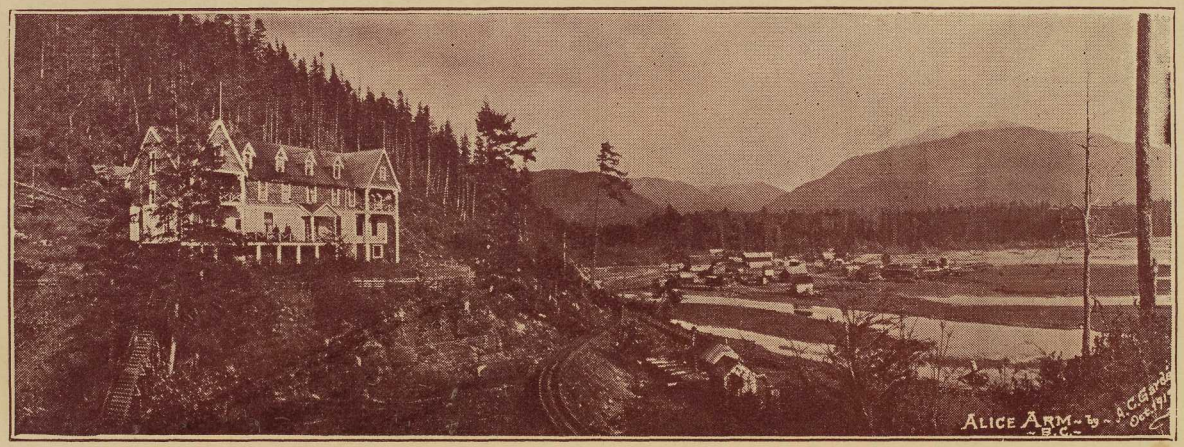
ALICE Arm is situated at the head of an arm of the Pacific ocean bearing the same name. This arm is a branch of Observatory Inlet, which joins the Portland Canal at the mouth of the Naas River. The largest portion of the town is built on the extensive and fertile flats of the Kitsault River, which afford ample room for expansion, and is considered one of the beauty spots of the coast.

It is situated a distance of eighteen miles from Anyox by water, 125 miles from Stewart and 100 miles from Prince Rupert. In an air line, the distance is sixteen miles from Anyox and fifty-two from Stewart.

A direct weekly service is maintained by the Union S.S. Co. with Prince Rupert, Vancouver and intermediate points. A first-class launch service is maintained between Anyox and Alice Arm; connections being made with the C. N. R. Steamships Prince Rupert or Prince George on Friday and the Prince Charles on Tuesday.

Alice Arm possesses a government telegraph office, and a telephone system connects the town with the wharf, Dolly Varden and Toric mines in the upper Kitsault country. A telephone service is also maintained with Anyox and other points. An asset of considerable importance is the Alice Arm Hotel; it being one of the most modern hosteleries in the north. The town also contains other hotels, rooming houses, general stores, post office, newspaper, sawmill, meat market, transfer and pack horses, auto service, restaurants, etc.

It is the distributing point of a rich mineral district, which extends south down the inlet for ten miles and north to the head of the Kitsault River, a distance of twenty-five miles. The tributary area east and west has a width of over twenty miles, and includes



General view of Alice Arm, showing the Alice Arm Hotel on left; the Dolly Varden Railway, and McGrath mountain on the right

the Illiance River Valley, Lime Creek, Roundy Creek, North-east Fork Kitsault River on the east, and the whole of the Kitsault River slope on the west.

Within a radius of twenty-five miles of the town are located some noteworthy mines, chief of which is the Hidden Creek mine at Anyox. Other well known properties are the famous Dolly Varden, Toric, LaRose, North Star, Esperanza, Wolf (joining Esperanza,) Keystone, and Wolf (near Dolly Varden. Other properties which contain large deposits of ore, are: Standard and Sunrise on McGrath mountain, Matilda, Tiger, Moose, Vanguard, Homestake, Climax, Homeguard, Chance, Silver Hoard, Three Musketeers, David Copperfield, Speculator, Bunker Hill, Lucky Strike, in the Kitsault Valley and many others throughout the district.

A Short History

Capt. George Vancouver—that intrepid British sailor and explorer—was the first European to visit Observatory Inlet, and gaze upon the frowning snow capped peaks surrounding Anyox and Alice Arm. He visited the district in 1793 and explored the numerous inlets, taking soundings and drawing charts.

The Lyle expedition, sent by the government in 1874, to find, if possible, an overland route from the head of Alice Arm to the Cassiar country, were the first white men—of whom we have any record—to enter the Alice Arm country. They explored the Kitsault Valley as far as the Glacier, and found a coal seam, from which they extracted coal to cook their food. This seam has recently been diligently searched for, but never found.

Who staked the first mineral claims in the Alice Arm district is still a matter of doubt. It is known that molybdenum showings were found by Indians on the

hill east of Silver City, which were investigated by Arch-deacon Collison and associates of the Naas Valley. Two English mining engineers examined the ground and sampled it, and a trail was built to it, but whether the ground was ever staked is not known.

It is known, however, that Frank Roundy staked three claims, which now comprise the Esperanza, in 1903, naming them "I'll Chance It," "Black Bear" and "Aldebaran." This staking was instrumental in forming a small settlement and started the development of the district's mineral resources.

Frank Roundy was a picturesque grizzled prospector, who, in a small launch prospected the entire northern B. C. coast. His first visit to Alice Arm was in 1888, and at that time the Kitsault River flowed on the west side of the town, where the school, sawmill, etc. now stand.

John Stark came in 1900, and he is the oldest resident of Alice Arm. He later staked on the waterfront, between where now stands the Alice Arm Hotel and wharf; he acquired the Wolf, adjoining Esperanza and staked the Bellevue, in the Illiance River Valley, the first claims to be staked in that section.

The news of the discovery of high grade silver ore gradually filtered down the coast. Joe McGrath, Norman Cane and Benjamin Williams came to investigate the reports of rich finds, and in 1907 staked what is now known as the Molybdenum property, four miles down the inlet.

More prospectors followed in 1908. John Strombeck staked the Alice and Silver Ridge. Frank Jones and Benny Williams staked on the west slope of McGrath mountain. George Young and Fred Juggins staked the Devil's Club, and Nos. 1 and 2, on what is now the Red Point property, and owned by J. N. McPhee. Rod McDougall staked two claims where the Dolly Varden wharf now stands and later sold to F. Roundy.

Joe Wells and William Dillworth also came in 1908, and crossed over to the Naas Valley; the first white men to accomplish the feat. In March 1909 they staked the Emerald and Albion on the North-east Fork of the Kitsault River.

Up until 1910, prospectors concentrated on the ground adjacent to tidewater, but that year marked a new epoch in the history of the camp, when Ole Evindson, Ole Pearson, K. L. Eik and E. Carlson came in and headed for the upper Kitsault. On July 10th. 1910 they located and staked the Dolly Varden, and later in the month staked the Red Point. Charlie Swanson acquired an interest in the Dolly Varden the following year.

A bond was taken on the Red Point by A. D. McPhee of Seattle, who turned it over to Mr. Hopkins, who persuaded R. B. McGinnis, a mining engineer, to examine it. He was shown some ore taken from the Dolly Varden, and in the spring of 1913 started the owners to work developing. Later in the year he secured a bond for $50,000.00 and commenced an active programme of development, which ultimately proved that the Alice Arm district possessed large quantities of high grade silver ore, and turned the eyes of the mining world to the vast potential wealth of northern British Columbia.

In September, 1915 a bond was taken on the Wolf property from Don Cameron for $50,000, by the Dolly Varden Mines Ltd. and since that time this property has been a part of the Dolly Varden holdings. Diamond drilling the following year proved the existence of large bodies of silver ore. Since then no further work has been done, mining operations being concentrated by the owners on the rich ores of the Dolly Varden.

A mill site was surveyed; wharf built at Alice Arm, and the railway to the mine constructed.

Water Power Possibilities

A study of the water power possibilities of the streams of the Portland Canal and Observatory Inlet country of northern British Columbia presents to the observer two main first considerations. These points must be kept in view in making a report on any project requiring a yearly maximum flow of power and economic investment.

The first of these points is the high difference in the peak of volume of flow and run off that all streams attain during the spring and early summer months, to the corresponding decrease in volume flow, to total slackness in some streams in the late fall and winter months. The other point, is the absence on most streams of suitable storage sites, where sufficient volume of water might be stored to meet the requirement of your plant over this low period of stream flow. This absence of suitable storage sites on most streams is not to be wondered at when you take into consideration that geologically the country is relatively young, which makes for narrow valleys and a steep run off.

But if there is a sharp run-off in the volume of water of the streams, it is compensated for by there being sufficient participation to flood any storage basins that might be constructed. With a total precipitation in excess of 6½ feet, sufficient water can be stored to meet the maximum requirements of your plant over the low period of stream flow. Established data shows that a volume of water should be stored to run your plant to maximum capacity over a period of not less than ninety days.

The mining camp of Alice Arm is singularly blessed in having several water power projects of great potential power, and whose harnessing would not be prohibitive in cost, but economically profitable. Sever-

Canyon Creek Falls on Dolly Varden Railway,
three miles from Alice Arm

al of these streams possess storage sites of great power. Further, the camp is fortunate in that the water power possibilities are located geographically, so that all parts of the mineralized area of the camp can be served.

CARIBOO CREEK

Cariboo Creek, which flows into the Illiance River at the head of the tide flats on the east side of Alice Arm, drains the plateau country to the eastward of the camp. This stream has an extensive drainage area which assures the flooding of any storage basins that may be necessary to meet the required power wants. This stream also has the decided advantage of being fed by a series of lakes, surrounded by a large amount of swamp land, which would make for a fairly constant volume of flow. These lakes range from an area of 100 acres to swamps and sloughs.

A noteworthy feature of this stream, from a power standpoint, is its high head, having a fall of 2000 feet in three miles. If thought more feasible, the stream could be tapped at around fifteen hundred feet elevation thus shortening the pipe line.

BOWMAN LAKES

Bowman Lakes, which lie to the east of the upper Illiance and on the Naas slope, form one of the branches of the Tchitin River, which empties into the Naas River. They consist of a series of three lakes, and lie in a natural storage basin. The two lower lakes, which have a difference of twelve feet in elevation, comprise an area of about 170 acres, and are surrounded by a large area of swamp and low land. They have a drainage area sufficient to flood any storage capacity required. These lakes possess an excellent dam site. The potential power that can be developed is in ratio to the volume of water that could be stored. Two miles of power line would place this power in the heart of the upper Illiance mineral country.

TROUT CREEK

Trout Creek flows into the Kitsault River from the east, at mile twenty-two. This stream has already been harnessed by the Dolly Varden Mines, and was in operation by them at the time of suspension of operations. The creek was tapped at 800 feet elevation, with the power house located on the Wolf property. A pipe line was laid to develop 500 h.p., but with the construction of storage dams this could be greatly augmented.

CLEAR WATER LAKE PROJECT

Clear Water Lake, which forms the outlet to Clear Water Creek, and lies six miles north of the Dolly Varden mine, is situated twenty-six miles from the town of Alice Arm, at an elevation of 2600 feet. In some respects this is the premier power project of the Kitsault Valley. It possesses a lake area in excess of 500 acres. The topography around lake will add greatly to acre feet of storage when lake is flooded, and it has a dam site which would make the erection of a dam at its outlet not excessive in cost. The construction of a pipe line 2½ miles in length, will give a total available head in excess of 1200 feet, and would make the power house four miles north of the Dolly Varden mine. The drainage area of the project is sufficient for storage purposes. A yearly output of six to seven thousand h.p. could be economically developed.

OTHER POSSIBILITIES

The district possesses other possibilities, details of which cannot be given at this time; namely the canyons of the Illiance and Kitsault Rivers, Goat Creek, etc. There are, of course, many small streams that might take care of individual properties.

DATA OBTAINABLE

Technical data may be obtained relative to some of the projects.

Transportation

Transportation costs in a moutainous country is one of the chief considerations of a mining company when commencing the development of a property. In the early days of Alice Arm it was a serious handicap, but thanks to the foresight of the Department of Mines, plus the energy displayed by the Department of Public Works, Alice Arm now possesses a transportation system that would be a credit to a much older community.

The district possesses seventeen miles of railway, two miles of automobile road, fifty-three miles of pack horse trail, and twelve miles of foot trail. They are divided in the different sections as follows:

The Kitsault River Valley is served by the Dolly Varden Railway, from the wharf to the foot of the Dolly Varden hill, a distance of seventeen miles. It is open to anyone who desire to use gasoline speeders, hand cars or horse cars. At the present time, four gasoline speeders are operating, in addition to hand cars, etc. During the past few years the railway has been kept in a state of repair by the Provincial Government.

From the end of the steel to the Kitsault Glacier—a distance of about eight miles—there is a first-class sled road, capable of being used by go-devils during the summer months and sleighs during the winter.

From the railway and main trail above, branch many other trails, the first of which is the Esperanza sled road of ¾ of a mile. At six-mile is the LaRose sled road, two miles in length. On East Creek, at 12-mile there are five miles of trail, 2½ miles horse trail and the balance foot trail. At 14-mile there is 1½ miles of horse trail on the Homeguard, also a bridge across the Kitsault River. At 20-mile there are three miles of horse trail to the Copper Cliff and Racehorse.

At 22-mile there is a horse trail to the Chance and Climax, and at 25-mile, 2½ miles of horse trail to the Vanguard.

The Shore Road extends from the wharf, through the town and terminates near the mouth of the Illiance River. It is used by automobiles.

On the North-east Fork of the Kitsault River a horse trail extends a distance of eight miles, branching off from the Shore Road half-a-mile from town, and terminating at the Devlin Zinc property.

Fifteen miles of good horse trail extends the entire length of the Illiance River Valley, terminating on the summit of the Illiance-Naas Divide.

Down the inlet there are five miles of foot trail on Lime Creek; four miles of horse trail on Roundy Creek to the Keystone, and 1½ miles of horse trail to the Mayflower.

From the town of Alice Arm, 2½ miles of horse trail extends to the Arber Arder on the west.

The above clearly shows that the district is well supplied with transportation facilities. As new properties are developed and conditions warrant, the system is enlarged, and any mining company making an honest effort to develop mining properties will receive the co-operation of the government regarding transportation facilities.

Shipping Facilities

Water transportation is the most economical in existence. The town of Alice Arm is located on tide water. It has a beautiful land-locked harbor, over one mile wide, with ample depth of water along its shores to dock the largest ships. A fleet of cargo carriers operate from Anyox, carrying copper, ore and concentrates to southern points; they also visit Alice Arm whenever necessary.

Mining Possibilities and Production for 1925 of Alice Arm District

By G. A. Clothier, Resident Engineer for the North-western Mineral District No. 1

The town of Alice Arm, situated on tide-water at the head of Alice arm, the southern branch of Observatory inlet, is both geologically and geographically one of the most advantageously located mining centres in the province of B. C.

Shipping facilities are excellent, and with the Dolly Varden railway extending 18 miles up the Kitsault River and serviceable roads and trails up the other valleys, transportation facilities to tide water are fine for any kind of mining operations

Situated as it is, just east of the granite coast range, an area within a radius of twenty miles of the town, lies about half in the granite range and half in the contact belt on the east of the granites. The possibilities of the granite rock formation is exemplified in the Granby Company's properties at Anyox. The contact belt is proving a wonderfully mineralized zone, by such properties as the Engineer mine in Atlin; the Premier, B. C. Silver, Big Missouri, Dunwell and others in the Portland Canal section; the Dolly Varden, LaRose, Toric and others, in this, the Alice Arm area. This portion of the contact belt is especially favored, for the reason that it is here reached by tide water, making it very accessible from Alice Arm for a length of forty miles and a width of over twenty miles. I know of no area in the province that offers more advantages and opportunities for the prospector than this.

Development work, encouraged by satisfactory results, has been steadily increasing and there are now several properties nearing the production stage.

Ore shed at Esperanza Mine, one mile from Alice Arm

The Toric and LaRose are probably the outstanding ones for the reason that they have been under active development. Many others, such as the Dolly Varden—whose ore was depleted during the war, is yet practically undeveloped—the North Star, Moose, Silver Hoard, Climax, Musketeer, Chance, Tiger, Vanguard and others up the Kitsault river; and properties on McGrath mountain, Illiance river, Lime and Roundy creeks, have real prospective merit. There is therefore, a fine field here for the investigator and investor.

The importance of this area from a production standpoint is shown in last year's output. Within a radius of twenty miles of Alice Arm, there were mined 1,168,695 tons of ore out of 3,849,269 tons for the whole province, or 30 per cent. This tonnage gave 7,484 ozs. gold (3.5 per cent. of the province;) 390,944 ozs. silver, (5 per cent. of the province;) and 39,510,163 lbs. of copper, (55 per cent. of the province.)

Everything considered, this section has great prospective merit, and warrants thorough investigation by both prospector and operator.

Respectfully submitted,

G. A. CLOTHIER,

Resident Engineer.

The Dolly Varden Mine

The Dolly Varden is one of the outstanding mines of the province. Its successful development of large deposits of extremely high grade silver ore was responsible for the development of numerous other properties in the district, and the building up of the town of Alice Arm. Discovery of these large deposits proved to the mining world that the north coast district contained commercial bodies of high grade ore, as well as low grade, and the discovery was instrumental in encourag-

ing the development of other mining districts in the north.

Several pages could be written regarding its early development; disputes of contractors and owners; legal entanglements; mismanagement and over-optimism of latter owners, all of which aided in suspending operations.

It was developed from a prospect to the shipping stage by the Dolly Varden Mines Ltd., whose capital was derived from Chicago. In June 1919 it was taken over by the Taylor Engineering Co., following a dispute over railway construction debts. In that year they shipped 6,709 tons of ore to Anyox smelter, yielding 423,952 oz. silver. During 1920, 28,037 tons of ore were shipped, yielding 831,638 oz. silver. A small shipment of 1,874 tons was made in 1921, yielding 45,648 oz. silver. A total of 1,301,238 oz., and at that time silver was selling at over $1.00 per ounce.

When the Taylor Co. took over the mine, their policy was to get out as quickly as possible all ore in sight. They failed to carry out necessary development work. Trouble arose among the investors in the company; legal proceedings were again pending, and the mine closed in December, 1920

It is the firm belief among those conversant with the mine, that, had the Dolly Varden Mines Ltd. retained control, and continued following their sound development programme, with the subsequent erection of a concentrating mill, the Dolly Varden and Wolf would have been in continuous operation. A lack of the technical points of mining, coupled with over-optimism and a lavish expenditure, were the chief causes of the suspension of operations.

During the present summer, prominent mining engineers have made a thorough examination of the mine, and it is expected that the Dolly Varden will shortly be again on the list of producing mines. The Dolly Varden and Wolf are now controlled by Chris. Spencer and associates of Vancouver.

Anyox---the Empire's big Copper Producing Centre

Anyox, the wonder mining town of British Columbia, situated 650 miles northwest of Vancouver, and eighteen miles by water from Alice Arm, has a history that reads like a page from a romantic novel.

Fourteen years ago it was known only to the Indian hunter and lone prospector, where today there stands the largest copper mine and smelter in the British Empire.

The plant includes a modern smelter, concentrator, coke plant, power houses and dams, seven miles of electric railway and the huge mountain of copper, known as Hidden Creek mine.

The town of Anyox, with its 2000 inhabitants is modern, having splendid roads, docks and wharves, bank, hotel, schools, hospital, theatres and churches.

The capitalization of the Granby Company is $50,000,000.00. The payroll at Anyox last year was approximately $2,000,000.00, supplies costing roughly $2,000,000.00 more. This speaks volumes for the property and the men who invested their money in the face of adverse expert advice on different occasions by eminent engineers. Geological conditions being considered against success.

The following report, covering the operations of the Granby Company's Anyox plant for 1925, is taken from the Minister of Mine's report for that year:

"Granby Consolidated Mining Smelting & Power Co. Ltd. This company has had a busy and successful year. The big mine and plant at Anyox has been operated continuously. The Outsider at Maple Bay, on Portland Canal, has been a steady shipper and some exploratory work was done on bonded properties. The Hidden Creek group produced this year 1,163,258 tons of ore, of which 416,292 tons went to the concentrator, producing 29,978

Waterfront scene at Anyox showing ore boats and scows waiting to unload, and a copper laden ship departing

tons of copper concentrates. This is the greatest yearly tonnage ever produced by the company, exceeding last year's tonnage which was high, by 112,525 tons. In addition to this, the Outsider, operated by the company, produced 45,596 tons of siliceous, low-grade copper ore, which is utilized for fluxing purposes. Altogether the production for the year was 6,997 oz. gold, 377,910 oz. silver, and 39,510.013 lb. copper, which is by long odds the best showing ever made by the company, the increase in copper-output over last year amounting to 3,500,000 lb. The total production of the Hidden Creek property, since the smelter was blown in in 1914, is 72,390 oz. gold, 3,830,260 oz. silver, and 331,187,931 lb. copper.

"The concentrator has been treating an average of about 1,200 tons a day, the concentrates being shipped to Tacoma. Sintering has been experimented with during the year and a portion of the concentrates is now sintered and smelted at the company smelter. It is planned in 1926 to double the capacity of the concentrator and install a sintering plant that will handle the total concentrate-output of the enlarged mill. Everything will then be smelted at the company's own plant. This year the coke plant produced:—

Coke (tons)	57,446
Tar (imperial gallons)	520,494
Tar paint (imperial gallons)	5,729
Gas (M. cubic feet)	882,147
Ammonium sulphate (lb.)	728,530
Concentrated ammonia liquor (lb.)	38,269
Motor-fuel (imperial gallons)	109,072
Light oil (imperial gallons)	134,927
Naphthaline (lb.)	32,800

"An average of 1,045 men was employed through the year.

"The personal of the Anyox staff includes: Chas. Bocking, general manager; W. R. Lindsay, general superintendent; G. M. Lee, smelter superintendent; John Swanson, mine superintendent; George Leslie, coke plant superintendent; W. B. Maxwell, concentrator superintendent; and C. M. Bagwill, chief accountant.

"Golskeish Mines, Ltd.—This mine has been worked steadily all year under the competent management of H. Heidman. During the year there was shipped to the Anyox smelter 5,264 tons of quartz ore, yielding 473 oz. gold and 2,891.4 oz silver.

List of Operating Properties

TORIC

The Toric group of mineral claims can be listed as one of the operating properties of the Kitsault Valley. It comprises a group of four claims and lies just across the canyon from the Dolly Varden, on the east side of the Kitsault River. The Minister of Mine's Report for 1925, states:

"The rock formation is Hanson's Dolly Varden formation, consisting of massive volcanics, which here is grey andesite."

"A tunnel was started just above the road (at 1250 feet elevation) and driven 215 feet to the ore body. From the end of the crosscut tunnel a drift was run east for 6 feet, and another west for 97 feet along the foot-wall of the vein, which was shown to strike east-west (mag.) and dip from 35° to 45° north. The main tunnel was continued 147 feet across the ore body, of which 128 feet was in ore. The hanging wall appears to stand a little straighter than the foot wall. This gives a width of ore between walls of about 70 feet.

"At a point in the west drift, 50 feet west of the main tunnel, another crosscut was driven in the ore body, and from the east drift, another crosscut (No. 1 crosscut east) was also driven in ore about 90 feet. Altogether over 500 feet of work has been done, in addition to the main crosscut tunnel to the vein, in blocking out a body of ore approximately 70 feet wide, 175 feet long and 200 feet through to the surface on the dip of the vein. All the crosscuts have been sampled every 10 feet, by the manager, A. C. H. Gerhardi, who states that the whole will average better than $12 a ton."

Since the above report was made, drifting was continued from the No. 1 crosscut east, showing a continuation of the ore body east. In drifting from the No. 1 crosscut east, a large body of very high grade native silver ore was cut, which brings to the fore a very important geological question as to its deposition. A study of this ore shows it to be thoroughly impregnated

with native silver, as if magmatically formed. And, too, since this deposit lies at an elevation of 600 feet lower than the elevation at which the high grade deposits of native silver were first encountered on the Dolly Varden property across the canyon, it is an interesting question, as to whether or not the native silver cut on the Toric is not primary ore.

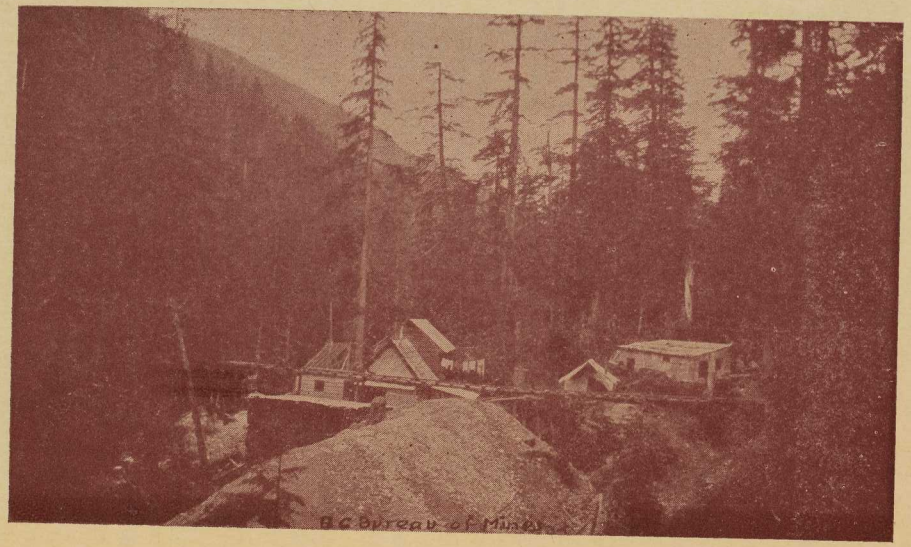
A mill is now being constructed on the property, to treat the ore by concentration. The first unit of this mill, consisting of a hundred ton crushing capacity, is expected to be operating by the end of the summer. Tests of the ore show that amalgamation and table concentration give the cleanest recovery.

ESPERANZA

There are approximately 10,000 tons of ore on the dumps and broken inside the mine, which will average $12.00 per ton; also considerable tonnage of ore shown up which will run about $20.00 per ton. The Esperanza vein has been traced several claim lengths. A thorough sampling of the mine has just been completed. The owners intend installing a concentrating mill of about 40 tons capacity as soon as financial arrangements, now under way are completed.

The following is taken from the Minister of Mines' Annual Report for the year 1924:

"This property, consisting of three claims situated on the west side of the Kitsault, about a mile from the town of Alice Arm, is owned by Mr. Fraser, in charge at the mine, and six associates at Anyox. R. Armour, of Anyox, is the secretary of the syndicate. It has been a very consistent small shipper for a number of years, though it has never had any plant of any kind on it and never a very large crew. It has shipped probably $100,000 worth of ore altogether. This year the production amounted to 232 tons of ore, yielding 28 oz. gold, 17,501 oz. silver, and a few hundred pounds of lead—a very creditable output. Experiments were made in shipping second grade ore to Granby.



View of camp

at the Toric Mine.

Upper Kitsault

Country

"At the request of the owners I made an examination of the property late this year and had all the ore and dumps sampled. The object of this was to ascertain whether the average ore in the mine would make a profitable milling ore. Heretofore the vein has all been mined and the high grade sorted out for shipment, the second grade going to the dumps. From my sampling I found that the entire vein in the present working-tunnel, averaging 40 inches in width, would average $12 silver a ton with silver at 67 cents an ounce, which I estimate will yield a profit of at least $4 a ton after the property is equipped with compressor, small concentrator, etc. There are two ore-shoots in this tunnel, aggregating about 80 feet in length, that will average about $25 a ton for a width of 33 inches. These ore-bodies would yield a good profit to mine and mill. The remainder of the ore would not pay to mine and mill, but would pay to mill after being mined to get the high grade.

"The dumps will average about 16 oz. silver to the ton as nearly as they could be sampled. These would yield a a good profit if concentrated. My conclusion was that a small capacity mill is a necessity and warranted by the present ore on the dumps and in the mine."

KEYSTONE

Keystone Mining Co. Ltd. Registered Office, Vancouver, B. C.

The Keystone Mine, situated on Lime and Roundy Creeks about 4 miles from Alice Arm, consists of 13 claims and two fractions the chief minerals being lead, zinc, silver and gold in the order named.

Development work is being done on a strong well defined fissure vein that cuts both the argillite and granite formations. The vein roughly paralleling the granite-argillite contact and can be traced for several claim lengths.

Development work to date consists of a number of open cuts, a 50 foot tunnel where a chute of ore assaying $63 per ton, was uncovered, and a tunnel 100 feet long which is advancing 3½ feet per day, on a vein which varied in width from 1 foot to 12 feet.

Latest authentic information states that this property will become one of the big mines of the district.

LaROSE

The following is taken from the Minister of Mine's Annual Report for 1925; concluding with a brief report of latest developments at the mine:

"Alice Arm La Rose Mining Co. This company was incorporated in February, 1920, with a capitalization of $1,000,000, of 1,000,000 shares, the registered office being in Prince Rupert. The four claims—Britannia, Britannia No. 1, Britannia No. 3, and St. Elois—forming the company's holdings are situated on Paul Klayduc creek, about two miles from the Dolly Varden Railway. There is a first-class pack-trail from the railway to the property.

"Several small shipments of high-grade silver ore were shipped by the owners prior to incorporation. The rock formation is blocky argillite and the vein is of quartz up to 18 inches wide, mineralized with galena, zinc-blende, pyrite, grey copper, argentite, and native silver. The sorted ore averaged nearly 300 oz. in silver to the ton. The ore shipped was taken from a shaft about 20 feet deep from which a little stoping was done.

"This year the necessary capital was raised and a crosscut tunnel was driven at 2,000 feet elevation; cutting the vein at 350 feet from the portal, and continued to 420 feet. A drift on the vein toward the shaft was then started. About 70 feet of work will be required to reach its objective, when a raise will be put through to the bottom of the shaft, about 120 feet."

Since the above was written, the raise, 130 feet in length has been driven to the bottom of the shaft. High grade ore was encountered the whole distance. Stoping on the vein of high grade ore from six to eight inches is now being carried on. Ore is being brought down the hill to the Dolly Varden railway for shipment to the smelter, and shipments of ore will be continuous. In addition to the high grade there is a considerable tonnage of milling ore available. Mr. Miles Donald is in charge of operations, and future prospects are bright.

WOLF

The following is taken from the Minister of Mine's Annual Report for 1925; concluding with a brief report of latest developments at the mine:

"This Crown-granted claim is owned by J. Stark and was staked by him several years ago. It is situated just above the railway-track opposite the town of Alice Arm and was bonded this fall by J. Fiva. The vein is a quartz vein varying up to 12 or 14 inches in width and bedded with the country-rock or slate and lying very flatly. The hanging wall has been stripped off the vein for a length of 125 feet and the vein mined out, sorted and sacked. A shipment consisting of 93 sacks of high-grade and 273 sacks of second-grade ore was sent to the Trail smelter. The 4 1-2 tons of high-grade assayed $5.40 in gold and 306.4 oz. in silver to the ton. The 273 sacks of second-grade weighed about 12 1-2 tons and assayed $2.20 in gold and 80 oz. in silver to the ton.

"A crosscut tunnel has been started and will be driven during the winter a distance of approximately 100 feet to cut the vein, which can then be stoped from the crosscut tunnel level."

The crosscut tunnel referred to above has been driven a distance of 155 feet, the last 30 feet of which was in ore. Drifting on the ore to the north is now being carried on. The drift is in 65 feet, 30 feet of which is in high grade ore. The vein is about 14 inches wide, 6 inches of high grade and 8 inches of second grade. There are 6 tons of high grade in the shed.

NOTE—There are two Wolf properties in the Alice Arm district. One being situated on Falls Creek, near the town, and the other in the upper Kitsault country, the latter being a part of the Dolly Varden holdings. The one referred to above is situated on Falls Creek.

MATILDA

Kitsault River Mining & Development Co. Ltd.

The company's holdings comprise eight claims, which lie to the north and west of the Homestake

group of claims, and about eight miles north of the Dolly Varden mine. They are reached by an excellent pack trail. Active development work was begun on these claims late in the season of 1925.

The Minister of Mines, in his Report for 1925, states:

"The general rock formation of Homestake mountain is Hanson's Dolly Varden formation of massive volcanics. The surface showing on the Matilda at the tunnel, 4,300 feet elevation, indicates a mineralized width of about 30 feet. The vein matter striking east and west (mag.) is silicified andesite, rather heavily pyritized with traces of galena, the more siliceous portion carrying the best mineralization of galena, zinc-blend, pyrite, and chalcopyrite. A sample of the best looking copper ore assayed: gold, trace; silver, 1.2 oz. to the ton; copper, 4 per cent. A sample showing mainly zinc, with a little galena, assayed; gold, trace; silver, 1 oz to the ton; lead 1 per cent; zinc, 16 per cent.

"There are several similar parallel veins, all heavily pyritized, which is low grade ore, but showing more galena and zinc where silification has been more intense. So far as known, these veins are small, there being only three of sufficient size to be of probable importance, one north and one south of the Matilda vein."

Late in the season of 1925, the vein on the Silver Tip mineral claim was drifted along further, and cross-cut, showing five feet of a good grade of milling ore.

This season's work will consist of developing the veins parallelling the Matilda vein, in addition to further developing the Silver Tip vein.

EAGLE, LeROY & SILVER CORD

The Eagle property, situated on Haystack mountain, and the LeRoy and Silver Cord, situated on the North-east Fork of the Kitsault River are being developed this year by the British Colonial Securities Ltd. of Vancouver.

Preliminary work now being done, consists of surface stripping and open cuts on the ore. Future development depends on the success of this work. A. McGuire is in charge of operations.

Mining Properties

There were 377 mineral claims in the Alice Arm district on which assessment work was recorded in 1925. In addition to this amount, there are a number of crown granted properties. It is impossible to publish a full list of all mining properties; but a partial list, which includes the better known has been given, which are as follows:

The Climax Group of two claims is located on Moose Hill about two and a half miles north of Dolly Varden Mine, and adjoins the Silver Hoard and Moose Groups. It is owned by Olier Besner of Prince Rupert, B. C., who has done a creditable amount of development work on the property. A tunnel started on the property in 1925 was completed this spring. This tunnel was driven along the vein for a distance of 50ft., at which distance the vein was crosscut, showing 22ft. of ore. The vein consists of a well mineralized silver-lead ore of a good milling grade.

North Star. This property consists of one claim and lies to the north and about 600 ft. from the Dolly Varden workings. It is owned by Ole Evindson and associates of Alice Arm. Development work consists of a main working tunnel about 250 ft. long, in which the main ore body has been drifted on for a considerable distance, showing the vein to be from 4 to 20 ft. wide. It is a silver-lead ore, showing ruby, native and argentite silver.

The Moose Group mineral claims contain five claims, and is located on Moose Hill 2½ miles north of the Dolly Varden Mine. It adjoins the Climax and Silver Hoard Groups. It is owned by Miles Donald and associates of Alice Arm B. C. The main development work consists of the No. 1 tunnel 100 ft. in length, driven in milling ore all the way, and

the No. 3 tunnel 200 ft. in length, which is the main working tunnel, at a lower elevation and in which the vein was drifted along for 90 ft. The vein in this tunnel is shown to be from 10 to 22 ft. in width and to assay a good milling grade of ore.

Tiger Group. This group consists of two claims and immediately joins the Toric Mine on the north. The vein which has been stripped and shown up to a considerable extent, is shown to consist of a series of faulted sections, the solution of which has called for a lot of prospecting and much study upon the part of the owner, Ed. Pickett of Alice Arm. It is a silver ore, showing native, ruby and argentite.

The Vanguard Group consists of four claims and is owned by M. Petersen, J. Strombeck and G. Strombeck of Alice Arm. It lies on Homestake Mountain in what is known as the "Copper Belt" and about 6 miles north of the Dolly Varden. Considerable development work has been done on this property. A fine showing of chalcopyrite exposed on surface has been cut at 70 ft. depth by a prospect tunnel, showing the ore to continue its width and and values.

Homeguard Group. Owned by Geo. W. Bruggy and Wm. McFarlane On Dolly Varden Railway at 14-mile. Ore carries copper, silver and gold.

Basin Group. Owned by Angus McLeod. On Goat Creek. Upper Kitsault. Ore carries copper, silver and gold.

Silver Hoard Group. Owned by A. Davidson, J. Strombeck, A. D. Yorke, G. Anderson. Adjoins Wolf. Silver ore.

Homestake Group Owned by A. Davidson and associates. Near Kitsault Glacier. Considerable underground work has been done. Ore carries copper. silver and gold.

Chance Group. Owned by A. McPhail and P. Morley. Adjoins Moose Group. Silver-lead ore.

Lucky Strike Group. Owned by J. Hauber, Wm. McLean and associates. Near Kitsault Glacier. Ore carries copper, silver and gold.

Musketeer Group. Owned by A. W. Meenach and associates of Seattle. Adjoins Tiger. Silver-lead ore.

David Copperfield Group. Owned by Wm. McLean and associates. Adjoins Dolly Varden. Silver ore.

Giant. Owned by H. Williamson and Wm. McLean. Joins David Copperfield. Silver-lead ore.

Black Diamond Group. Owned by J. Hauber. Clearwater Creek, Upper Kitsault. Silver ore.

Ouray Group. Owned by Dumas & Robertson and A. E. Egan. Adjoins Wolf. Ore carries copper, silver and gold.

Wildcat Group. Owned by A. Davidson. Homestead Creek. Upper Kitsault. Considerable underground work has been done. Ore carries copper, silver and gold.

Second Thought Group. Owned by J. Graham and Geo. Casey. Upper Kitsault country. Silver ore.

Bunker Hill Group. Owned by J. Calvin and J. O. Trethewey. Near LaRose. Ore carries silver, lead and gold.

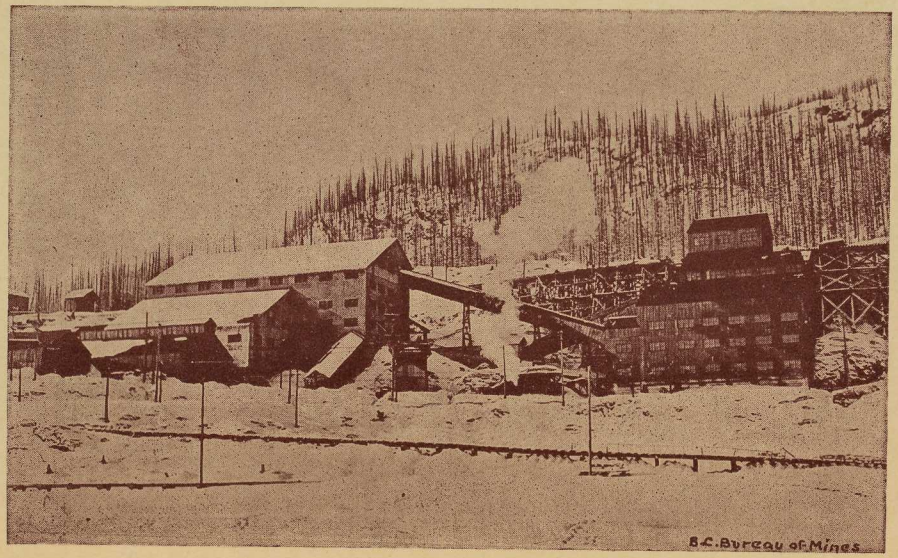
Speculator Group. Owned by J. O. Trethewey. Near LaRose. Silver ore.

St. Vincent Group. Owned by J. Peacock. At 6-mile on Dolly Varden railway. Silver ore.

Ruby. Owned by J. C. Smith of Seattle. Adjoins Toric on the south. Silver ore.

Red Point Group. Owned by Ole Evindson and associates. Evindson Creek, Upper Kitsault. Ore carries copper, silver and gold.

Copper Cliff Group. Owned by A. Davidson and J. Wells. Upper Kitsault. Ore carries copper and gold.



Concentrating Plant

of

Granby Consolidated

Mining, Smelting

& Power Co. Ltd.

Anyox

Zorka Group. Owned by A. Serbich. On Dolly Varden Railway at 12-mile, near West Creek. Copper silver-gold ore.

Riverside Group. Owned by W. A. Wilson, J. A. McDermaid, and J. A. Wilson. Adjoins LaRose and Bunker Hill. Ore carries silver and gold.

Sidney Group. Owned by Hans Peterson. On Goat Creek. Silver ore.

Vulcan Group. Owned by J. Stark and associates. On East Creek. Copper-gold ore.

Silver King Group. Owned by F. Mattson. On East Creek. Silver ore.

West Creek Group. Owned by Rod Campbell On West Creek. Zinc ore.

The following list of properties are situated in the sections of the North-east fork of the Kitsault River, McGrath Mountain, Illiance River, down the inlet, and immediately adjacent to the town of Alice Arm.

Lyon Group. Owned by Neil Forbes and associates. 1½ miles from Alice Arm. Silver ore.

Lone Maid. Owned by N. Fraser and associates of Anyox. Adjoins Esperanza. Silver ore.

Red Bluff Group. Owned by J. N. McPhee of Butedale. Five miles from Alice Arm. Copper ore.

Arber-Arder Group. Owned by A. McPhail and associates. One mile from Alice Arm. Silver values.

Success Group. Owned by W. A. Wilson and associates. Two miles from Alice Arm. Silver ore.

Standard Group. Owned by Miles Donald and associates. On McGrath Mountain. Zinc ore.

Sunrise Group. Owned by G. W. Morley and Al. Clary. On McGrath mountain. Zinc ore.

Billy Mac Group. Owned by Tony Calfa and associates. On McGrath mountain. Zinc ore.

Horse Shoe Group. Owned by Elmer Ness. On McGrath mountain. Copper ore.

Theda Bara Group. Owned by Frank Jones and Ralph Ingraham. Adjoins Keystone. Silver lead ore.

Verona Group. Owned by T. McRostie of Anyox. On Roundy Creek. Silver-lead ore.

Mohawk Group. Owned by Geo. Naden of Victoria and associates. On Roundy Creek. Silver ore.

Mayflower Group. Owned by Geo. Bruggy and Wm. McFarlane. Four miles down inlet. Ore carries silver and zinc.

Beach Molybdenum. Owned by Geo. Bruggy and Wm. McFarlane. Near Mayflower. Molybdenum ore.

Last Chance Group. Owned by J. Wells, J. Waldis and Geo. Naden. On Lime Creek. Silver-lead ore.

Copper Creek Group. Owned by G. W. Morley and associates. Illiance Valley. Silver-lead ore.

Bellevue Group. Owned by Dr. W. T. Kergin and associates of Prince Rupert. Illiance Valley. Ore carries copper, silver and gold.

Homebush Group. Owned by A. D. Yorke. Illiance Valley. Silver-lead ore.

United Metals. Owned by United Metals Co. of Seattle. Illiance Valley. Silver-lead ore.

Monarch Group. Owned by W. B. Bower and associates. Illiance Valley. Ore carries copper, silver and gold.

Silver Star Group. Owned by W. B. Bower and S. Moran. Illiance Valley. Silver ore.

First Chance Group. Owned by W. McDonald J. Flynn, and F. Martinson. North-east Fork of Kitsault River. Copper-silver ore.

Rainier Group. Owned by C. Williams and J. O'Hara. North-east Fork of Kitsault River. Copper-silver-gold ore.

Silver Rose. Owned by J. Flynn, Neil Forbes, F. Martinson, and J. Collins. North-east Fork of Kitsault River. Zinc-lead-silver ore.

Devlin Zinc Group. Owned by Anglo-Belgian Mines Ltd. of Vancouver. On North-east Fork of Kitsault river. Zinc ore.

FURTHER INFORMATION AVAILABLE

Anyone desiring information on any unmentioned mining property, can obtain same from the Secretary, Alice Arm Branch B. C. Chamber of Mines

Timber Resources

The use of timber is indispensable to mining, and an abundance in the proximity is an asset of considerable importance. Nature has endowed the Alice Arm district with a plentiful supply of fine timber, clothing its hills and valleys with some of the finest stands on the north coast. The timber line extends to an elevation of about 3500 feet. The supply of timber for mining operations is inexhaustable, billions of feet being available.

During the past three years logging operations have been conducted on the Kitsault River Flats, and over 38,000,000 feet b.m. have been shipped to southern paper and saw mills. The ground logged off comprises only a fraction of the timber resources of the district.

HR
TN 27
B7
A33
1926

SKETCH MAP
ALICE ARM SECTION
NASS RIVER MINING DIVISION

To accompany Report of
G.A. Clothier Resident Engineer
919

Scale

0 1 2 3 4 5 Miles

Kitsault Glacier
Red Bluffs
Homestake Group
Smith
Flint
Manners
Red Hills
Leon
Slate Mtn
Greenish and Reddish Diabase Rocks (Alternating)
Andesite or Diabase
Railway Pass Elev 2700'
Black Diamond Ck
Andesite
Vanguard Group
Sedimentary ?
Clearwater
Columbia
Lake
Creek
To Kinskuch River and Nass Valley
Log Across
Last Chance
Trout Ck
Bluebottle Ck
Moose Falls
Andesite
Climax
Silver Horde
Wolf
Bridge
Musketeer
Hootar
Bridge
Andesite
Sedimentary ?
West Fork Kitsault River
Copper Clip Group
Copper Creek
Combination Mtn El 4000'
Andesite
Bonanza
Starlight
Racehorse (Dan Patch)
Combination
Kitsault Group
Tiger
Toric Bridge
Ruby
Silver Bow
Sawtooth Mtn
Hastings Arm summit
Black Bear Ck
Red Point
1500' El
Cabin
North Star
Silver Tip
Dolly Varden
Big
Railway Flats
Bridge
Andesite
Probably Andesite
Andesite ?
Peaks
David Copperfield
Surprise
Bull Dog Gulch
Evindsen Ck.
Massive Mtn
Canyon
Andesite
Andesite
Sedimentary ?
Geology Unknown
Homestead Ck
Wild Cat
Medallion
Canyon Boy
Cabin
Central
Miner Ck
Cable Ferry 450' El.
Homeguard
Traveller
Sedimentary Rocks and Fragmental Rocks. Slates, Argillites in part Volcanic Origin the latter probably Cut by Diorite Dykes and Small Andesite Intrusions.
Sawtooth Ridge
Main
East Ck.
West Ck.
Cabins
Slate
Trail
River
Probably Sedimentary
Mashed Diabase Rocks
Glacier
Left Over
Fork Tchitin River
The Glacier
Yankee Boy
Andesite-Granite Contact Unknown
Strike of Most Dykes
Quartzite
Spring Camp
Henderson Claim
Cable Ferry
Riverside Group (Zinc)
Quartzite Peak
Ida
Butte
Northern Light
Andesite
Small Canyon
Mud Ck.
Lake View
Balmoral
Top Notch
Sapphire
Silver Belle
Silver Hoard
Monarch
Cabin El 3000'
Silver Star
Cabin
Silver Star
Joplin
Hotspur
Gray Goose Fr
Cabin
Bellevue Group
This Area Probably Mostly Sedimentary Conglomerates and Arkose Cut by numerous Diorite Dykes With some Volcanic Tuffs
Paul Klayduc Ck.
No 9
No 10
La Rose
Haystack Mt
B.C.
Granite Ck.
Granite
Silver Wings
Jones Ck
Copper Crest
Falls
Canyon Ck.
Slate
Washout Ck
Slate
War Dance
Kitsault
Red Bluff
2900'
Sandstone (Tufaceous)
Falls
N.E. Branch
Motherlode
Waverly
6000'
Mount Theophilus
Green-Red Diabases Probably Occur Here
Golden Crest
Cabin
Bridge
El 1900'
To Bowman's Camp and Mineral Spring
Pass El 2000'
Illiance River
San Diego
650'
McGrath Mtn 4000'
Black Bear
Copper Ck
Alice Group
1750'
Lone Maid
Esperanza
Falls Ck
Independence
Wolf
ALICE ARM
Arberarder
Caribou Fr.
Tide Flats
Dolly Varden M. Co. Wharf
Granite
Slate
Molybdenum M. and R. Co
Tram
Andesite
Black Bear
Alamosa
Standard
Slate
Casey's
Casey Ck
Foxy Grandpa Ck
Slate
Wharf
SILVER CITY
Flagstaff
Riel's Camp
Alice Arm
Lime Ck
Table Mtn (Volcanic)
Mohawk
2250'
Roundy Ck
1975
Caribou Group (Molybdenite)
Slate
Slate
Sunset
Basin
3900
Silver Bow
2475
Last Chance
Granite

C. Bureau of Mines

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