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CANADA
DEPARTMENT OF MINES AND RESOURCES
HON. T. A. CRERAR, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER

MINES AND GEOLOGY BRANCH
JOHN McLEISH, DIRECTOR
BUREAU OF GEOLOGY AND TOPOGRAPHY
F. C. C. LYNCH, CHIEF

GEOLOGICAL SURVEY

MEMOIR 209

MINING INDUSTRY OF YUKON, 1936

BY
H. S. Bostock



OTTAWA
J. O. PATENAUDE, I.S.O.
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1937

Price, 10 cents

No. 2438

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PREFACE

Information for this report on mining activities in Yukon during 1936 was gathered by the writer during the field season and by correspondence throughout the year. J. R. Johnston who was in charge of a Geological Survey party at Freegold mountain has assisted by supplying the information on that locality. The writer expresses his appreciation to all who assisted him.

Mining Industry of Yukon, 1936

PLACER MINING

SIXTYMILE RIVER DISTRICT

The Holbrook Dredging Company continued dredging on the left limit of the Sixtymile valley against the west slope, and was approximately at claim Thirteen above Discovery. The season began late and no ground was dug before August 1. After that date the dredge ran intermittently and dug a total of 54,276 cubic yards for the season. This small yardage was due largely to the lack of thawed ground. During the summer a thawing plant and Diesel pumps were installed to cope with this factor. In addition, stripping was done with an hydraulic plant, and wood was cut. Approximately thirty men were employed.

On Miller creek Messrs. McCormick and Stewart began hydraulicking above the roadhouse on the left limit, but owing to lack of water discontinued this work. Their chief operations are on a bench channel on the left limit below the roadhouse. Shafts have been sunk in this channel 60 to 90 feet deep and drifts on bedrock have been driven for 100 feet or more from the bottom of each shaft. This channel formerly had only been traced to claim Seventeen below Discovery. The present work is on claim Twenty-nine below Discovery, and a shaft has also been sunk 120 feet to bedrock on claim Thirty-three or Thirty-four below Discovery. During the writer's visit drifts were being driven on bedrock from the bottom of the shaft on claim Twenty-nine below Discovery. A small steam plant and hoist with a derrick and self dumper were in use and the gravel dump was washed daily with the little water available. Ten to fourteen men are employed in this operation.

KLONDIKE DISTRICT

During the season of 1936 the Yukon Consolidated Gold Corporation, Limited, continued their dredging operations and also carried out an extensive development program, which together have involved the expenditure of approximately \$1,800,000. In Klondike valley the dredge Yukon No. 2, formerly Canadian No. 2, continued to work in the central part of the valley below Bear creek; Yukon No. 3, formerly Canadian No. 3, is on the east side of the tailings in Bonanza basin close to the main road; Yukon No. 4, formerly Canadian No. 4, has worked up the valley to the Arlington area near the mouth of Hunker creek and is ready to begin digging the large area of good ground that is being prepared for it.

A thawing plant is working ahead of Yukon No. 3 on the old tailings and at Guggieville. A large area has been stripped of muck in the Arlington area and the thawing plant has been laid out over it in preparation for operation in the spring. Three large pumps, yielding 6,000 gallons a minute each with 100-foot head, have been installed to supply water to the

stripping and thawing plants. A camp has been built at Arlington to accommodate forty men. The accommodations for the men were enlarged at Bear creek. A large warehouse and a number of smaller buildings were moved from Guggieville and improved. At both these camps central heating systems have been installed for the buildings.

On upper Dominion creek, Yukon No. 1, formerly Northwest No. 1, has continued to work upstream and is now close to Upper Discovery. Stripping and thawing plants continued to work ahead of the dredge. Some prospect drilling was done ahead of these operations to determine the amount of dredging reserves remaining in this area.

On middle Dominion creek, below where Yukon No. 1 originally began dredging, extensive prospect drilling has been done. Four hundred and ninety-seven holes have been put down and a large area of ground has been added to the reserves both in the creek flat and on the benches.

Below Granville, Yukon No. 5, formerly Northwest No. 2, and Yukon No. 6, the new dredge built last winter, are on the right limit of Dominion creek approximately a mile from the mouth of Sulphur creek. Large stripping and thawing plants are working on the ground ahead of them. These operations are supplied with water pumped from Dominion creek. A new camp for one hundred and twenty men was completed at the entrance of Sulphur Creek valley on the left limit.

On middle and lower Sulphur creek preparations are being made to install two dredges. Stripping has been started, using two pumps and water from Sulphur creek. The water in the creek, however, is not sufficient for the coming developments. Surveys were made for a ditch system to furnish more water from Australia creek for the stripping and thawing operations. The ditch will have a capacity of 1,500 miner's inches and will conduct water from a point about 5 miles above the mouth of Australia creek to opposite claim Fifty below Discovery on Sulphur creek. This system consists of 4.85 miles of ditch on Australia creek, which is about three-quarters completed including one spillway and foundations for the intake dam. The water will be carried across Dominion creek by an inverted siphon and raised to a higher level on the Sulphur Creek side by a 1,600-horsepower pumping station. The pipe-line has been moved to the site. The ditch up Sulphur creek is 10.7 miles long and is about one-quarter completed. Two hundred and twenty-six holes were drilled on upper Sulphur creek to complete the determination of the limits of dredgeable ground on the creek. A camp for eighty men has been completed on middle Sulphur creek.

On Quartz creek Yukon No. 7 operated throughout the season. To provide more water for stripping a pumping station has been built on Indian river and 2,300 feet of pipe and 1.4 miles of ditch with a capacity of 300 miner's inches were constructed to carry water to the upper part of the Quartz Creek dredging area.

The ditch system that supplies the hydroelectric power plant on Klondike river was rebuilt. A dyke was constructed along the bank of the south fork of Klondike river to protect the intake of the ditch there from flood water. The intake of the north fork ditch was also protected by brush mats, timber cribbing, and sheet steel piling on both sides of the river. The bridge across the river at the north fork intake was completely

rebuilt. The north fork ditch was deepened and widened for over $4\frac{1}{2}$ miles and the ditch bank was reinforced with 15,700 cubic yards of earth. About 4 miles of 33,000-volt transmission line was reconstructed. Much work was also done on secondary lines, transformers, and telephone lines.

The operations of the corporation may be summarized as follows: a total of 7,957,000 cubic yards¹ of muck, gravel, and bedrock were dredged, 1,290,000 cubic yards of muck was removed by the stripping plants exclusive of that on upper Dominion creek, and 2,046,750 cubic yards of ground was thawed in Dominion valley below Granville.² Much work was done on power ditches, hydraulic ditches, and camp construction power lines, and 7,200 tons of freight was hauled.

The prospect drilling for the season, including that done on Black Hills creek, mentioned later, amounted to 27,920 feet of drilling, and the total amount of ground proved as dredgeable reserves amounted to slightly over 15,000,000 cubic yards.

Extensive surveys were made on Sulphur creek, in the Granville area on Dominion creek, and in the Arlington area on Hunker creek, in addition to surveys required for construction projects and operations.

The average number of men employed for the entire year was two hundred and ninety-eight, and the average number during the three peak months of the season was four hundred and seventy-one.

The season was cold at the start, but ended up particularly favourably as the freeze-up was exceptionally late and the creeks kept up well in the latter part of the summer and in the autumn. Yukon No. 4 began digging on April 20 and with the exception of Yukon No. 6, the new dredge on Dominion creek which was put in operation on June 22, all the other dredges were digging by May 10. Dredges Yukon Nos. 5 and 6 on Dominion creek closed down on November 5, and Yukon No. 1 on upper Dominion creek on November 7. Yukon No. 7, on Quartz creek, closed down on November 25 and Yukon Nos. 3 and 4, in the Klondike valley, at about the same time. Yukon No. 2 shut down on December 2, the latest date of operation in 1936.

A few individual miners worked on Bonanza, Hunker, Dominion, Quartz, and Sulphur creeks, but the numbers were reduced from those of former years owing to the demand for labour created by the operations of the Yukon Consolidated Gold Corporation.

South of Indian river three miners were working on the west fork of Eureka creek. One or two men were working on the south fork of Henderson creek. The Yukon Consolidated Gold Corporation made some steps to begin drilling on this creek, but little had been done when the creek was visited in August. The drill had been left between the mouth and the forks and no men were on the ground.

During the spring Black Hills creek was the centre of considerable interest. It is reported that the creek was originally discovered in 1898 and named by its discoverers after the Black hills of South Dakota. Little work was done and the creek was soon abandoned. It was again occupied in 1906, but was abandoned after a small recovery of gold. It was taken

¹ An increase of 2,732,000 cubic yards over the yardage in 1935.

² No figures are available for the other localities, which include upper Dominion, Bonanza basin, Guggieville, and Quartz creek.

up for the third time about 1920 by Messrs J. Carpenter and A. Marsh. It was then stamped and staked at least to claims Eighty below and Forty above Discovery which was at the mouth of Dome creek. The Yukon Consolidated Gold Corporation drilled three hundred and twenty-seven holes on Black Hills creek during the winter and spring and then abandoned the creek. It is reported that a considerable yardage of good dredging ground was found in the upper part of the creek, but that as the drilling extended down the creek, and it was carried beyond Eighty below Discovery, the values became too low. It has been said that if the creek were nearer to the centre of operations it would be worth dredging, but that being so remote from hydroelectric power the operating costs would be considerably higher than on the Klondike creeks and the values did not at present warrant the instalment of a dredge. In the past the best ground was reported to be that on the bench at Discovery. Here a cut has been made by Messrs. Carpenter and Marsh about 2,500 feet long and 300 feet wide. The gravel was 10 to 20 feet thick. This appears to be the largest working on the creek and is reported to have paid well. Below Discovery workings are scattered along the creek and benches for more than 8 miles, but none is extensive and altogether they cover only a small part of the ground, large stretches remaining untouched. The bench on which the large cut has been made on Discovery can be seen extending up the creek for over a mile, and it is reported to be virgin ground up to claim Ten above Discovery. Above claim Ten a number of claims are said to have paid well and good ground is reported to have been found in places up to approximately claim Forty above Discovery. From a brief visit to the creek these reports appear to be correct, and it seems probable that good ground which would pay to work by hydraulicking in the same way as that at Discovery occurs on the benches. In the future the flats of the creek may prove remunerative when the value of gold is higher or some more economical method of treatment is devised.

No word of the operation in progress on Clear creek and its tributaries was received during the summer, but it has been recently reported that the creeks are to be explored by the Fairbanks Exploration Company.

MAYO DISTRICT

The amount of placer gold turned in at Mayo this year was 793.69 ounces, which is 34 ounces more than last year. The gold was recovered from the same part of the district, chiefly Highet, Haggart, Ledge, Duncan, and Davidson creeks, and Dublin gulch.

OTHER DISTRICTS IN CENTRAL YUKON

South of Stewart river miners have been working on many of the old creeks, including Barker, Scroggie, Thistle, Kirkman, and Canadian, and also on Selwyn river. Kirkman creek in particular has been more active this year than formerly owing to a number of newcomers attracted to the creek by the excellent showings of Messrs. Britton and Mann a year ago. About ten miners were working on Nansen and Victoria creeks, and are reported to have made exceptionally good clean-ups. No prospecting was reported in the lower part of Pelly river and its tributaries, but some prospectors are reported to have flown into the Frances Lake district.

LABERGE AND TESLIN DISTRICTS

No details are available of the activities in the Livingstone camp, but it is reported that most of the seventeen white men mentioned as working in that neighbourhood last year have continued there.

Mr. L. W. Staples, general manager of the Inca Mining Corporation, Limited, reports that his corporation drilled a series of five lines of holes approximately 1,000 feet apart on Iron creek. These showed that a deep channel extended under the northeast bank under a great thickness of overburden in which some of the holes were 82 feet deep. The values did not exceed 20 cents a yard at any point along the creek and no further work has been done.

SOUTHWESTERN YUKON

In this part of the territory the placer work has been confined to Bullion creek, where four men were working. No mining was reported on the Yukon part of Squaw creek or on Iron creek.

PRODUCTION

The total placer gold production in Yukon for 1936 was 62,740.29 crude ounces, which is over 18,000 ounces more than last year. Approximately 793.69 ounces were turned in at Mayo, 595.72 ounces at Whitehorse, and the remainder at Dawson.

LODE MINING

The extensive developments carried on by the Treadwell Yukon Company, Limited, in Mayo district, revived the active interest in this camp. In other districts some lode prospecting continued, but no important strikes were reported.

KLONDIKE DISTRICT

The owners of the Lone Star mine, on the ridge between upper Bonanza and Eldorado creeks, carried on some surface prospecting of their ground, but the results of this work are not known.

MAYO DISTRICT

In August 1934 the Treadwell Yukon Company, Limited, closed down their operations, but early in 1935 they re-opened with renewed vigour and started an extensive development and construction program involving the building of a 150-ton concentration mill at the Elsa mine on Galena hill and much underground exploration in their properties, particularly the Elsa and Silver King mines. In the spring of 1935 two new prospects were discovered on Galena hill. These were acquired by the company. By the beginning of 1936 when the mill began operation the reserves of ore had been greatly increased. Not only had large tonnages of new ore been found in the Elsa and Silver King mines, but two new properties known as the Hector group were found to contain considerable tonnage of readily accessible ore. As the result of these factors the capacity of the mill is being increased to 200 tons a day. In August during the writer's visit it was said that there was more ore in sight in the mines on Galena hill than

ever before, and also that it was of better grade. The mill was treating about 175 tons a day at that time, 50 tons being taken from the stopes and the rest from the development drifts, etc. During the winter more ore, and higher grade ore, has been blocked out. The tonnage of sacked ore and concentrates has been steadily increasing on the river bank at Mayo, and it is expected to reach 11,000 tons or more by the opening of navigation. With the tonnage hauled to Mayo during the summer this promises to rival or exceed the tonnage shipped in any previous year from Mayo district. The company has had about one hundred and eighty men on the payroll most of the winter. This has absorbed most of the prospectors in the district, so that little prospecting has been done. During the year the company has spent more than \$950,000 in developing their properties in the district.

Keno Hill

The Treadwell Yukon Company, Limited, put up a lead frame, and timbered and deepened the shaft 125 feet on the Hope Gulch property. The 100-foot level was driven and an ore pocket built. A small tonnage of high-grade ore was sacked and shipped, and about 1,000 tons of milling ore stored on the dump. The property was then closed and the men working moved to Galena hill.

Messrs. T. Mackay and D. Morrison prospecting on the Shepherd claim on Crystal creek have discovered a vein. A few other prospectors have done assessment work on their claims. A little high-grade ore was taken out to ship during the summer.

Galena Hill

The Elsa mill and power plant started operation on March 1. Its capacity was 150 tons, but was increased to 175 tons by August, and with additional flotation cells and power is being brought up to 200-tons capacity. Many new camp buildings have been put up. In the Elsa mine the chief development has been drifting along the vein. On the 200-foot level drifts have been driven in both directions, and it was hoped that the ore would be found to continue from the 200-foot level to the surface on the northeast side of Porcupine gulch where an ore-bearing vein was picked up last spring. Some of the ore is partly oxidized and this commonly results in a poor recovery, but recently the metallurgical treatment and concentration ratio have been improved and a much better recovery is being made.

At the Silver King drifts were being carried both ways on the 200-foot level and a branch drift was being driven on a spur of the vein heading in a northeasterly direction. The shaft is now being sunk to the 300-foot level. Five drift faces seen by the writer showed ore of good width which was unexpectedly high grade. The ore-bodies were said to be the most persistent bodies of ore yet found in the district. The ore from this mine is carried in 10-ton dump trucks about 3 miles to the Elsa mill. A large tonnage of mill ore lies on the dump at this mine.

At the Hector group, which includes the Hector and also adjacent claims formerly held by Messrs. C. Singard and McCown as well as the X Fraction and adjacent claims formerly held by Messrs. D. Morrison and Colley, underground development and camp construction are in progress.

The two shafts on the Hector and X Fraction claims, about 300 feet apart, are both being developed. One shaft is down to the 150-foot level and the other close to the 100-foot level. A drift has been driven most of the way between them and is in ore for its whole length. High-grade ore, mainly taken from the development of the shafts and drifts, is being sacked and shipped to Mayo. During the summer 200 to 300 tons a month were shipped from the group.

On the No Cash claim Messrs. Brefalt and Tolmie sacked and shipped 200 tons by March 1. Then Messrs. Brefalt and Gustafson leased the Arctic group of Messrs. Settlemier and Bermingham until November 1. In August they expected to ship about 240 tons in all from this property. Since then Mr. Brefalt has been developing the No Cash property, and since November 1 Mr. Bermingham has carried on development and exploration on the Arctic group. He reports that he has found the vein on the east side of a prominent fault which cut it off. This has proved particularly satisfactory, as in the past a considerable amount of work was done by previous operators trying to locate the ore beyond the fault. Mr. Bermingham reports that eleven samples taken from the extension of the vein just found averaged 235 ounces of silver to the ton. He is now mining ore, which he reports is averaging 300 ounces of silver to the ton and 70 per cent lead, from the stope in the older part of the workings. This stope extends to the surface where the ore-body is $1\frac{1}{2}$ feet wide.

At the northeast end of Galena hill Messrs. Beck and Formo are prospecting the Formo property where Messrs. Beck and McPherson recently found a large showing of lead ore of a grade slightly too low to ship.

A new discovery has been made by Mr. J. Sugiyama on a claim north of the Rio claim, but not enough work has been done yet to prove its worth.

CARMACKS DISTRICT

During the summer a Geological Survey party under J. R. Johnston made a detailed examination of the immediate neighbourhood of Freegold mountain, and the following notes on the operations there have been supplied by him.

The activity at Freegold mountain sustained by the development carried on by the Yukon Consolidated Gold Corporation on the Laforma group waned late in May when the corporation dropped its option and withdrew from the area. Six to eight prospectors remained during the summer months, mainly to carry on representation work, and from time to time a total of twelve others visited for the same purpose. Meanwhile, several interested parties were engaged elsewhere in promoting finances for further work. Recent reports indicate that three companies have been formed to take over properties and that exploration work will be renewed with increased vigour during 1937.

Development work carried on during the winter by the Yukon Consolidated Gold Corporation centred on the Goose mineral claim of the Laforma group. Twelve men were employed, and the work consisted mainly of extensions from former workings. The east drift from the lower or No. 2 adit was continued to a total distance of some 800 feet from the point at which the adit intersects the shear zone. The extension of the drift shows

that the character of the shear zone is maintained along its strike, which is approximately 22 degrees east of north. The zone averages 20 feet in width and is occupied by quartz veins, sheared granodiorite, and seams of sulphides and gouge. Gold values obtained are said to be consistent with those found in the original, or southwestern, part of the drift. At a point in the east drift approximately 350 feet from its entrance a raise was driven along the steep slope of the shear zone to the surface. Close to the intersection of the raise with the surface an adit was driven to intersect the shear zone. At the time of the writer's visit this working had caved.

The Yukon Consolidated Gold Corporation also conducted some exploration work on the Alpha claim of the Laforma group. Following the finding of rich quartz float on this claim a vein was discovered by surface trenching. The work of the corporation consisted of driving an adit to intersect the vein at a depth of approximately 100 feet. The adit, 292 feet long and bearing 24 degrees east of north, is in blue-grey quartz porphyry for the greater part of its length. It intersects, at an acute angle, a number of north-striking seams of blue clay gouge which are slightly offset by east-west faults. At the north end of the adit a narrow dyke of dark brown feldspar porphyry, striking north 40 degrees west and dipping 75 degrees southwest, cuts the quartz porphyry. Stringers of comb quartz intersect both types of dyke rock, but no well-defined quartz vein appears in the tunnel.

The owners of the Laforma group are negotiating with a view to securing capital to develop the property further, but no definite news has been received of their progress.

At the northwest end of Freegold mountain Mr. P. F. Guder continued exploration work on his claims. Late in the spring he had used melting snow water to clean out a long, deep trench at the head of Cabin creek and 350 feet northwest of the Marguerite shaft. The new working exposes several narrow quartz veins, one of which Mr. Guder believes to be an extension of the Marguerite vein and from which he reports an assay of \$13.29 in gold.

During the winter a discovery was made at the extreme west end of Freegold mountain near the mouth of Guder creek and an assay of \$31 in gold is reported.

Considerable interest was created by the discovery of a new vein on the Theodore claim of the Brown-Fairclough group. This group, held by Messrs. A. Brown and G. Fairclough of Selkirk, is situated below timberline on the southwest side of Freegold mountain, and comprises the following claims: Wild Rose, Theodore, Shamrock fraction, Victoria, Gold Bank, and Keno fraction. The first three named adjoin the Laforma group on the southeast. As most of the prospect workings are on these three claims, the following notes refer mainly to the ground that they cover.

There are few rock exposures, the greater part of the claims being covered by 3 to 8 feet of soil and slide rock. The exposures available and the character of the rock float indicate that the underlying rock is part of a granodiorite stock that occupies most of the west side of Freegold mountain. A large dyke of brecciated quartz-feldspar porphyry cemented by quartz extends southeast from the Laforma group across the lower claims of the Brown-Fairclough group. The prospect workings are on the mountain

side above this dyke. Bits of float and one exposure in a trench on the Theodore claim indicate the presence of quartz-feldspar porphyry dykes in the vicinity of the workings, but the disposition and extent of these dykes are not apparent.

Up to September the prospect work had been limited to surface trenching and stripping, most of the work being on the Wild Rose and Theodore claims. Two lines of trenches expose the so-called "Wild-Rose" vein and the newly discovered "Theodore" vein.

The Wild Rose trenches are arranged at intervals along a northeast-trending line for a total distance of 1,000 feet. At the southwest end of this line two trenches, spaced 100 feet apart, crosscut a quartz vein 2 feet wide which strikes northeast and dips 80 degrees northwest. Shear planes in the granodiorite wall-rock are parallel to the vein. An open-cut 250 feet northeast of the uppermost trench exposes a vein 18 inches wide which strikes northeast and dips 65 degrees northwest. At the other end of the line of Wild Rose trenches three open-cuts spaced 30 feet apart expose irregular, lenticular sheets of vein matter varying from 3 inches to 3 feet in width. The veins are roughly parallel, their average strike being northeast and dip 60 degrees northwest. In the uppermost and largest of the cuts three irregular veins occur, separated by walls of altered granodiorite. The zone is at least 15 feet wide, but considerably less than half of this is occupied by quartz. A northwest-trending dyke of brecciated quartz-feldspar porphyry in a matrix of quartz appears to intersect the vein zone a few feet northeast of this open-cut, but the actual intersection is not exposed. A number of other trenches and openings have been made at intervals between the localities mentioned above. These had either not reached bedrock or were caved at the time of the writer's examination.

The Theodore vein workings are offset approximately 100 feet east of the upper (northeast) Wild Rose trenches. Three trenches crosscut a northeast line at intervals of approximately 30 feet. The upper trench shows no vein matter. A vein in the lower or southwest trench is 12 inches wide and strikes and dips parallel to the Wild Rose vein exposures. In the middle trench a 12-inch vein strikes north and dips 70 degrees to the east. Another, small, intersecting vein here appears to lie parallel to the vein in the lower trench.

A characteristic feature of much of the granodiorite wall-rock exposed in the trenches, and of the rock float in their vicinities, is its sheared and altered condition. The rock consists of prominent quartz grains in a groundmass of kaolinized feldspar and chlorite. The vein exposures of the Wild Rose group are probably not of continuous veins, but of sheets of vein matter arranged parallel to one another in a northeast-trending zone of shearing.

Quartz in the veins is stained to a varying extent by limonite. Streaks of limonite and seams of gouge stained with limonite occur in the sheared wall-rock, in some places several feet distant from the veins. Sulphide, as seen in freshly broken quartz, is largely iron pyrite with a little arsenopyrite and occasional tiny specks of chalcopyrite. Much of the quartz is dark blue-grey due to the presence of fine, disseminated crystals of sulphides. Some native gold can be seen in vein matter in the Theodore trenches and heavy pannings are reported from oxidized material taken

from these workings. Good values in gold are said, by the owners, to have been obtained in samples from veins in the upper, northeasterly trenches of the Wild Rose zone.

An encouraging feature is the apparent similarity in mineralogy, occurrence, and structure of these showings, and those of the adjoining Laforma group. In the latter case values in gold consistent with surface values have been found underground. As the showings on the Brown-Fairclough group are in an elementary stage of development, further work must be done before they can be judged correctly.

Recent reports state that work of this nature has been undertaken by a newly organized company known as the Mount Free Gold Yukon Mines, Limited. The company is said to have agreed, in its option, to place a 10-ton mill on the property by May 1, 1937. The initial work, under the direction of Mr. T. Bee of Carmacks, has been to drive a tunnel to intersect one of the veins of the group at a distance of 100 feet. According to latest reports this tunnel had been driven 50 feet by January 1937.

The American-Yukon Mining Company holds a number of claims on Emmons hill, which lies approximately 2 miles southeast of the summit of Freegold mountain. Previous to the formation of the company a syndicate composed of some of its principals had financed a considerable amount of work on the claims. This work, carried on late in 1935 and during the ensuing winter, was directed by Mr. T. Bee.

The main workings are grouped about a point 1,000 feet north of the summit of the hill and consist of trenches and a timbered shaft. A partly caved trench exposes part of a band of grey, granular quartzite which, from surface float, appears to extend a distance of 1,000 feet or more to the northwest, and is bounded on either side by gneiss. The width and dip of the quartzite horizon could not be determined by the writer.

The shaft, offset a few feet east of the quartzite as exposed in the trench, has been sunk to a depth of 92 feet. Crosscuts, to intersect the quartzite, have been driven at depths of 40 and 92 feet, and are reported by the owners to be 27 and 50 feet in length, respectively. The walls of the crosscuts were covered by ice at the time of the writer's visit, and could not be examined. A large part of the dump above the shaft consists of quartzite, and it is evident that most of the workings are in this rock. The quartzite is grey to bluish in colour, and granular in texture. Some of it is heavily mineralized with pyrite, and much of it is stained with iron and manganese oxide. Some vein quartz was also noted on the dump.

Assays as high as \$60 to the ton in gold are said to have been obtained at a depth of 15 feet in the shaft. The owners report most consistent values at depths of 60 and 65 feet where assays varied from \$26 to \$31 a ton.

In September 1936 the American-Yukon Mining Company was formed to take over the claims on which these workings lie. According to Mr. F. W. Renworth, president of the company, exploration will be continued on the property in 1937.

Messrs. Wm. Thier, Carl Miller, and associates, hold a group of ten claims situated close to the east fork of Foster creek, $3\frac{1}{2}$ miles from the junction of the stream with Seymour creek. Considerable trenching was done by the owners in the autumn of 1935 and spring of 1936 in a search

for the source of quartz float containing good values in gold and distinguished from other vein quartz by its content of red iron oxide. Although the search resulted in the discovery of several veins, none of these yields gold in quantities comparable with the float.

During the summer months, with the aid of a small pump, Mr. Thier stripped six trenches on the east-facing slope of the creek on which the camp is located. These trenches, which are spaced across a total distance of 375 feet, expose a shear zone in granodiorite near the contact of the latter with a body of greenstone. The shear zone is at least 60 feet wide and is occupied by sheared and silicified granodiorite, seams of gouge, a few narrow quartz veins, and stringers of comb quartz. The main direction of shearing is north 40 to 50 degrees west, with a steep dip to the southwest. The foot-wall side of the zone is not exposed. The hanging-wall side in the northern trenches is bordered by felsitic dykes and in the southern trenches by felsitic dykes and greenstone. The dykes are of two types; blue-grey quartz porphyry and grey-green to white feldspar porphyry. The latter type predominates and intrudes the former. The contact of the felsite dykes with the granodiorite appears to be extremely irregular. This effect may be due to cross-faulting across the shear zone.

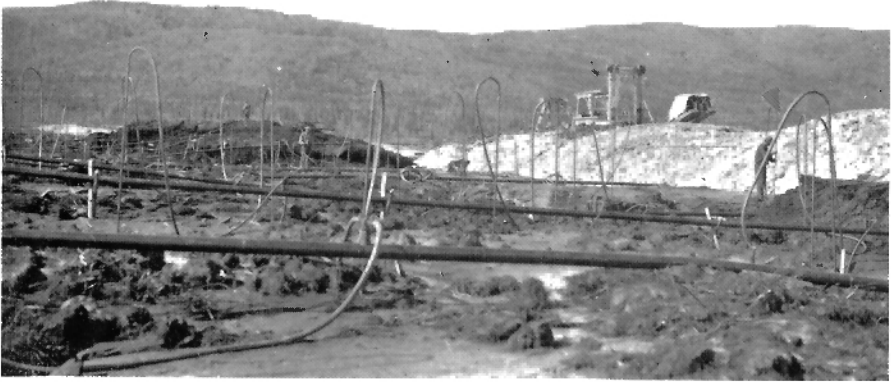
Quartz in the shear zone is partly chalcedonic and partly finely crystalline and bluish grey. Pyrite can be seen in the quartz and occurs also in the sheared granodiorite and felsitic dykes. The sheared granodiorite is everywhere stained with brown iron oxide. Samples taken by the owners across the veins and sheared wall-rock have given disappointingly low assays in gold.

OTHER DISTRICTS

During the year a number of prospectors worked in Wheaton River district and reported some promising showings of both gold and silver-lead veins. Mr. J. O. Stenbraten has been directing some of the prospecting and reports enthusiastically of the developments on the properties.

In the last two or three years a number of engineers have visited the old properties along Windy arm, Tagish lake, and some prospecting has been in progress there. In this section Mr. L. W. Staples of the Inca Mining Company reports that the company has uncovered a vein paralleling the Big Thing vein. Outcrops of the new vein have been found for a total distance of 7,000 feet, and in one open-cut it is 40 feet wide. Preparations are being made to continue exploring the property during the coming season.

During the year twenty-nine mineral claims were staked on Ferguson creek, a tributary of Jarvis river, and registered at Whitehorse. It is reported that promising lode gold prospects have been discovered in this section, but no details have been obtained.



A. Cold water thawing plant of the Yukon Consolidated Gold Corporation on Dominion creek near the mouth of Sulphur creek. The frozen ground is thawed by cold water which is forced down through vertical iron pipes known as "points."



B. Sacking ore on the Hector group, Galena hill, 1935. The large lumps of galena seen in the picture are being broken up and sacked.

