REPORT

of the

Territorial Mine Inspector

to the

Governor of Alaska

For the Year

1915.

Report of the Territorial Mine Inspector

Juneau, Alaska, February 8, 1916.

Sir:

I have the honor of submitting to you my annual report for the calendar year 1915.

Very Respectfully,
WILLIAM MALONEY,
Territorial Mine Inspector.

Hon. J. F. A. Strong,
Governor of Alaska.

INTRODUCTION.

During the past calendar year, the mineral output of Alaska exceeded that of any previous year. This is attributed largely to the high price of copper, which prevailed during the year, giving renewed activity to the opening and developing of copper properties.

The estimated value of the minerals produced during the calendar year, 1915, is $31,826,940, and is distributed as follows:

Copper	$14,633,950
Gold	16,752,000
Antimony	189,345
Tin	79,471
Marble	74,888
Gypsum	65,810
Lead and Matte	31,476
Total	$31,826,940

The total output for the year 1914, was $19,064,963.

WORK OF THE INSPECTOR.

During the year 168 placer mines, 31 quartz mines and 30 dredges were inspected, employing approximately 3,000

men. The Fairbanks, Hot Springs, Tolovana, Tenderfoot, Ruby, Iditarod, Seward Peninsula, Valdez, Seward and Juneau districts were visited and operating mines inspected.

SAFETY.

More interest is being taken in making the mines safer for the employees. The placer mines show a very marked decrease in accidents since they have been under inspection.

The results obtained from work done in making the mines safer are satisfactory to everyone concerned. The Treadwell Mining Company invites the co-operation of the employees in making suggestions to the employers and bosses relative to the improvement of places that come within their observation. At the close of the month the one who makes the best suggestion is awarded a prize. In this manner the gratitude of the employer is shown and the interest of all employees is encouraged.

A "Safety First" team was organized by the Company for each of its mines. One of the teams entered the "Safety First" contest at the Panama-Pacific Exposition at San Francisco and gave an excellent account of itself, tying for the fourth place and receiving the fifth prize.

ACCIDENTS.

There were 23 fatal, 92 serious and 387 slight accidents reported during 1915. Although the Territorial law requires the reporting of fatal or serious accidents "in the quickest manner possible," very few of the operators report "serious accidents." The majority of the serious and slight accidents above stated were received through the annual report of the mines, made on the blank form sent out for that purpose, but that does not fulfill the requirements of the law as to serious accidents. A "serious" accident, so far as it relates to injuries to persons, is construed to be such an accident as in the opinion of a reputable physician may result in the injured person's being incapacitated for a period of two weeks or more. A broken arm, leg, rib, etc., are examples, and should be reported immediately.

Estimating the number of men employed in and around the mines in the Territory at 5,000, the ratio of those killed would be 4.6 per one thousand. As above stated, few serious accidents were reported and only about one-

third of the operators returned the annual reports that were sent out. It is necessary, therefore, to base the figures relating to serious and slight accidents upon the annual reports received. On this basis the average number of men employed was 3,564. The ratio for serious accidents, 92, is 25.739 per one thousand; that for slight accidents, 387, is 108.585 per one thousand.

The principal cause of accidents is fall of rock; the next in importance is explosions. Eleven fatalities occurred by fall of rock, four by explosions, three by falling down shaft, one by falling over cliff, one by a tram, one by cars, one by machinery and one by object falling down shaft.

Before the miner is permitted to begin work special attention should be given to the barring down of loose rock or ground. The covering and guarding of all openings in the mine must be carefully and consistently kept up to obtain efficient results. Most of the accidents that occur are due to the carelessness of some person and are, therefore, preventable.

The following is a detailed list of fatalities for the year 1915:

January 6, Stephen Naas, aged 38, Canadian. Knocked off ladder by descending bucket in shaft; employed by Glassner, Naas & Co., of Nome.

January 29, Peter Erickson, aged 46, Swede. Fell down a shaft in the Fairbanks district while prospecting.

February, Otto Oman. Fell down shaft on 70-Mile Creek.

May 4. Axtel Hellund, age 31. Slab fell from roof. Employed by Ed Hern, Tenderfoot creek, Fairbanks District. Postoffice, Richardson.

June 3, Richard Hasselberg, age 34, Swede. Fall of rock, Treadwell mine, Treadwell.

June 7, John Bonar, age 24, Russian. Fall of rock from roof. Beatson Mine, Kennicott Mining Co., Latouche Island.

June 29, Anton Sepich, age 58, Austrian. Fall of rock, Treadwell Mining Co., Treadwell.

July 10, Richard Opitz, age 36, Swiss. Fall of rock Perseverance mine, Alaska Gastineau Co., Juneau.

July (date not given) Ralph Maritini, Italian, age 24. Plank fell down shaft striking him. Pacific Gypsum Company, Gypsum.

Sept. 15, R. Milke, age 30, Canadian. Blast from miss-

ed hole. Granby Cons. M. S. & P. Co., Ltd., Hadley, B. W. I.

October 8, John Canale, age 24, Italian. Blast while doing assessment work. Went into cut before the last hole was blasted, supposing that he had forgotten to light it. Ebner Gold Mining Company, Juneau.

October 18, Luigi Batello, age 38, Italian. Fall of rock from roof. Treadwell Mining Company, 700 mine, Treadwell.

October 13, Mato Jono, age 38, Austrian. Fall of rock. Ellamar Mining Co., Ellamar.

November 3, Tony Ujcich, age 36. Austrian. Passing blast when blast went off. Perseverance mine, Alaska Gastineau Co., Juneau.

November 9, Chas. Stevens, age 42, German. Blasting missed hole. Mexican mine, Treadwell.

November 15, Maurice Libbreckt, age 23, Belgian. Went into chute to see if ore needed blasting. The ore started to run, catching and crushing him. 700 mine, Treadwell.

November 26, (name unknown) Injured on tram, dying 5 days later. Goodro Mine, Hollis.

November 27, Louis Tabacovich. Fell over cliff. Beatson mine, Kennicott Mining Co., Latouche Island.

November 30, Peter Rogulj, age 33, Austrian. Struck by car while walking on track. Perseverance mine, Alaska Gastineau Mining Co., Juneau.

November 27, George Moore, age 35. Italian. Fall of rock, Perseverance mine. Alaska Gastineau Mining Co., Juneau.

November 27, Andre Del Castel, age 24, Italian. Fall of rock, Perseversance mine. Alaska Gastineau Mining Co., Juneau.

December 4, John C. Bayard. Fall of rock. Alaska Juneau Mining Company, Juneau.

December 18, Edward Shanda, age 28, American. Caught in hoisting machinery. Treadwell Mining Company, Treadwell.

DREDGES.

There were 38 dredges operated in Alaska during 1915. Of these 33 were on Seward Peninsula, one in Circle, one in Fairbanks, two in Iditarod and one in Sunrise districts. Five new dredges were installed during the year. Four dredged for gold, and one for tin. The one operated for placer tin was installed on Buck Creek, York district. One of the gold dredges was installed on Cam

Creek, Council district; one on Center Creek, Nome district; one on Kougarok River, Kougarok district; and one on Mastodon Creek, Circle district. In addition, one dredge was shipped to Ruby to be installed on Greenstone Creek, and one to Cook Inlet to be installed on Cache Creek during 1916.

LABOR CONDITIONS.

There has been an ample supply of labor over the entire Territory, an excess being noted in most districts, due no doubt to the advertising that Alaska is receiving through the building of a railroad, opening of the coal fields, and the general tendency of the government to open and develop the great resources of Alaska, all of which development will be comparatively slow. However, the building of the railroad and the opening of the coal and mineral ground adjacent to the railroad will eventually give employment to a large number of men. The opening and developing of coal or quartz mines require time and until developed large numbers of men cannot be employed in any one mine. While the railroad will give employment to approximately 2,000 men, there are, as usual in such cases, ten men for each and every position to be filled. When the eight-hour law for all underground mine workers went into effect in July, disputes between the operators and the miners caused the suspension of work for a short period.

Wages remained practically the same as last year, $5.00 per day and board being paid in Nome and the Interior camps for eight hours' work, and from $3.00 to $4.00 per day in Southeastern Alaska and the coast in general, the miners paying $1.00 to $1.25 per day for board.

SOUTHEASTERN ALASKA.

About 12 gold mines and 4 copper mines were operated in southeastern Alaska during 1915. The estimated gold production of this region, including the output in the Porcupine district, has a value of about $5,500,000. The estimated copper production from this field, all of which came from the Ketchikan district, was 4,500,000 pounds, valued at about $800,000.

The Rush & Brown was the only copper mine operated in the Ketchikan district throughout the year. Operations were resumed at the It, Mamie and Mount Andrew mines in the spring and continued for most of the

year. The Mount Andrew mine closed down in the fall, but was expected to resume operations about February 1, 1916. Operations were started on the Jumbo mine early in the summer and the mine is again on a productive basis. Some ore was shipped from the Goodro and Cymru mine, and development continued on the Big Harbor and other properties. The Ready Bullion, Dutton and Valparaiso gold quartz mines were operated, and there was some output from the Gold Standard, Googoo, and Snowdrift claims. Marble quarrying continued in the Ketchikan district, as in previous years.

Considerable work was done on both copper and silver-lead properties in the Wrangell district. Some shipments of barite were made from a deposit located near Wrangell.

The plant of the Chichagof mine, in the Sitka district, was enlarged and the mine was operated throughout the year. Gypsum mining continued at Iyoukeen Cove, on Chichagof Island.

JUNEAU DISTRICT.

Mine developments near Juneau, because of their magnitude, overshadow operations in the other parts of Alaska. Gold lode mining in this field, already developed on a scale that ranks the Juneau district with the foremost in the industry, is rapidly assuming still greater proportions. The growth is a natural response to a fuller knowledge of the size and character of these bodies and the economic possibilities of the large scale operations. The large size of the ore bodies, the transportation facilities, cheap fuel, water power, and labor reduce the cost of operation and make it possible to work available low-grade ore that, under conditions slightly different, would be valueless.

The chief productive mining activities in the Juneau district are at the four mines of the Treadwell group, on Douglas Island, where large scale operations have been in progress since 1887; and the Alaska Gastineau, of Sheep Creek and Gold Creek Basin; the Alaska-Juneau, in Silver Bow Basin, and Juneau.

THE TREADWELL MINES.

The Treadwell group of mines consist of the Treadwell, Seven-Hundred foot, Mexican and Ready Bullion mines on the east side of Douglas Island near the shore of Gastineau Channel, along the strike of a single lead. This

group of mines, with the 900 stamps comprising the aggregate of the four mills, was operated continuously throughout the year. The construction of 30 additional stamps at the Ready Bullion mill and the installation of new steam turbine engines and boilers to furnish power for the operation of the same is about completed.

Living accommodations, consisting of clean sleeping apartments and mess rooms sufficient to house the men required, are provided near the mines. The sleeping apartments are divided into rooms containing not more than two beds in any one room. There are wash rooms and lavatories in each apartment house, and janitors are furnished to keep them clean. The employees have organized what is known as the Treadwell Club, the housing of which includes an auditorium, reading rooms, pool and billiard rooms, bowling alley, hand-ball court, swimming tank, baths, showers and lavatories. The employees are all members of the club. The dues are one dollar per month.

ALASKA GASTINEAU.

The Alaska Gastineau Gold Mining Company is mining and developing the properties of the Alaska Gold Mines Company, which comprise mineral lands in the Sheep and Gold Creek basins. There is a mill at the mouth of Sheep Creek, or Thane, and a reservoir and water power plant on Salmon Creek. All of the mining done by this company was on the Perseverance Mine which has been developed to furnish the mill at Sheep Creek with ore. The mill has a daily capacity of 8,000 tons. The caving system of mining is used. All of the drifts are driven in the foot wall and raises run, keeping well in under the foot wall. Holes are drilled into the lode from these raises and the ore shot off the foot wall and allowed to cave from the hanging wall. Pillars are left at intervals along the strike of the vein.

A vertical three compartment shaft, 1544 feet in depth, the collar of which has an altitude of 2300 feet above sea level, is used to hoist men and material to the different levels. It is intersected by the Alexandra crosscut at a depth of 900 feet, where the main 250-horse-power air hoist is installed in a station cut in the foot wall. The ropes from the drums pass up a raise and under deflecting sheaves; then up the ladder-way compartment of the shaft and over the main sheave wheels near the top

of the reinforced concrete headframe, and then return to the cages. The headframe of this shaft is concrete in which the sheave wheels are placed at a sufficient height to provide a safe margin for overwinding. The walls of the headframe have a thickness of two feet and six inches at the base and taper to one foot at the top. The bottom of the shaft connects with an 8 by 10 adit, having a length of 10,000 feet and a tram 1 1-4 miles long, and connects the portal of the adit with the coarse-crushing plant on Sheep Creek.

Reduction Plant.—The first of the reduction plants of the company was completed and put in operation during the year. The coarse-crushing plant is situated on the hill 350 feet above the beach from which the ore falls into underground storage bins and is drawn on conveyors through an underground tunnel 300 feet long to the fine-crushing plant, where it is passed through crushers, rolls, Harding conical mills, jigs and classifiers, to the concentrating department, where Wilfley tables prepare the concentrates for the retreating plant.

Automatic vertical skips hoist the coarser ore, after it has been screened, from the lower bins to ore bins on the upper floor from which it is passed through the rolls again until all of it has been crushed to the desired fineness. No water is used in the crushing until the ore reaches the concentrating tables, and classifiers. The mill, when developed to full capacity, will crush and mill 8,000 tons per day. Over 6,000 tons were mined and milled per day in October at a total cost for mining and milling of sixty cents per ton.

Accommodations have been built at both the mine and the mill for the full force of men required to operate them at full capacity. At the mine staff houses, bunk houses, mess house, club house, office buildings, blacksmith shop, machine shop and compressor plant are situated near the entrance to the Alexandra crosscut adit, on upper Gold Creek. A new change room, fitted with shower baths and chain lockers is nearing completion at this camp. Club rooms, fitted with billiard and pool tables, card tables and reading rooms are furnished free to the men. At the mill camp, which is situated on the beach at Thane, roomy, clean bunk houses, fitted with wash and bath rooms, mess house, office buildings, machine shop, warehouses, store and wharf are constructed.

ALASKA JUNEAU.

The properties operated by the Alaska-Juneau Gold Mining Company are situated in the Silver Bow Basin, on upper Gold Creek, and adjoin those of the Alaska Gastineau Company on the North. The extensive development work now in progress on this property was begun in August, 1912. The chief work done, so far, has consisted of mine development, surface improvements and establishing connections between the mine and the mills which are being constructed on Gastineau Channel, just south of Juneau. The mine and mill are connected by a 10,000-foot tramway and a 6,538-foot adit. The activities during 1915 were directed to the running of crosscuts, putting in chutes, raises and opening out preparatory to stoping. The caving system, by a new method, will be used on the main haulage level. Two parallel drifts will be driven 250 feet apart, one in the foot wall following the Silver Bow Basin fault line; chutes will be put in on both drifts, raises put in and parallel overhead drifts run, manways put in connecting the upper and lower drifts, bulldozing chambers put in on the first upper level opposite each chute in such a manner that the bulldozer can pass along the drift, which will be back in the foot wall, and bulldoze the fragments that are too large to pass through the chutes without going into the stopes. The ore to be mined between the parallel drifts will be undercut by incline stoping from both drifts to the center, from which raises will be driven to the level above and from these raises small crosscuts drifts will be driven and loaded with powder and blasted, breaking down the ore.

The raises can be entered from the upper levels and the crosscutting, loading and firing can all be done from above, thus removing the danger from caving, as all the work will be done above the stopes in solid ground.

A 50-stamp mill was operated throughout the year, being used to test the ores and methods of treatment. Ground was broken and construction work begun on an 8,000-ton mill, which will be finished during 1916. An oil-burning plant will be built on the beach to furnish power.

Development work will be continued on the properties of the Alaska Gold Belt, Alaska Treasure, and Alaska Taku, all of which are near Juneau.

The Eagle River mine was operated for a part of the year and a little productive mining was done on the Peterson properties. Developments were continued on the Yankee and Montana and other properties north of Juneau and the Enterprise on Limestone Inlet, south of Juneau.

In the Berners Bay region, at the Jualin Mine, a new power plant is nearly completed. Hydroelectric power is to be used, supplemented by an oil-burning plant. A group of claims, including the old Kensington, Bear and Comet Mines, have been consolidated and the installation of equipment begun.

The old Funter Bay mine on Admiralty Island has been re-opened and was operated on a productive basis during the year.

FAIRBANKS DISTRICT.

There was a marked increase in the gold output in the Fairbanks district during 1915 over that of 1914. The value of the gold output was $3,612,000 in 1915 as against $3,109,072 in 1914, an increase of $502,928. The output was somewhat curtailed by a dispute between employers and employees in July, when the eight-hour law for all underground mine workers went into effect, some of the operators and miners agreeing to work ten hours during the season.

One hundred underground placer mines, 14 quartz mines, and one dredge were inspected in the Fairbanks district during the year, employing about 1,200 men. In addition to the underground placer and quartz mines, 15 placer mines were operated by the opencut method, using steam scrapers. These were on Goldstream, Gilmore, Pedro, Fairbanks and Cleary Creeks.

Cleary Creek and the section of Chatanika River Valley, adjacent to its lower course, form the most productive placer mining center of the district. Twenty plants were operated on Cleary creek during the mining season from Claim No. 8, above discovery, to No. 17, below discovery, employing 275 men.

Little El Dorado Creek.—Five plants were working on Little El Dorado Creek during the season, employing 30 men. Most of the plants were operated by partnership agreements. Few men were employed that were not interested as partners.

Dome Creek.—Eight plants were operated on Dome Creek from No. 3 above discovery to No. 7 below discovery, employing 48 men. On lower Dome, which is part of the Chatanika River valley, there were two plants on the Niggerhead Claim, 1 on the Shakespeare and 1 on the Day Dawn Association, employing 50 men.

Vault Creek.—Four claims were operated during 1915, employing 80 men. Three of these were on upper Vault and one on the Oregon Association.

Wolf Creek.—Five claims were operated on Wolf Creek, employing 22 men. This creek is a tributary to Cleary Creek.

Fairbanks Creek.—Four underground placer, three steam scraper plants and one dredge were operated on Fairbanks Creek during the season, employing 67 men. This is the only dredge in this district. It is operated by the Fairbanks Gold Mining Company. One steam-scraper plant was operated on Alder Creek, which is a tributary of Fairbanks Creek.

Pedro Creek.—On Pedro Creek several steam scrapers were operated during the season. The Hanot Brothers installed a new mechanical scraper by an overhead trolley system. The scraper is loaded by the usual system of hauling by cable. After the scraper is loaded it is hoisted and carried to the dump box by an overhead trolley instead of dragging it up an incline to the dump box, the system used by the ordinary scraper plant, thereby saving, not only the wear on the scraper, but also the extra steam necessary to drag a loaded scraper up an incline over rough ground.

Goldstream.—Fifteen underground placers, and four steam-scraper plants were operated on Goldstream, employing 100 men. On First Chance and Gilmore Creeks, both tributaries of Goldstream Creek, placer mines were worked in a small way.

Ester Creek.—Twelve underground placer mines were operated on Ester Creek during the year, employing 150 men.

Happy Creek.—Two plants were operated on Happy Creek with considerable success, new pay having been struck during the winter on the left limit of the creek at a depth of 140 feet. The ground was thawed but stood well and could be worked economically, there being no water underground.

Other Streams:

St. Patrick Creek, Smallwood Creek and Fish Creek

were worked to some extent during the season, but no very extensive mining was done.

LODE MINING.

The most important lode operations in the district were the Rhoades-Hall Mine, on Bedrock Creek, and the Crites & Feldman mine, on Moose Creek. The Rhoades-Hall mine closed on the first of September, and will remain closed for the winter. This is the first time that this mine has closed since its inception. The Rhoades-Hall mine employed an average of 25 men. The Crites & Feldman property employed five men in the mine and one in the mill, and mined and milled on an average seven tons of ore per day from a ledge with an average width of eight inches, working one eight-hour shift. A new five-stamp mill was installed on Fairbanks Creek for the Mayflower and Ohio quartz mines. There was also a small Huntington mill installed early in the year on Fairbanks creek near the same property, doing custom milling. Both helped to encourage development work in this vicinity. The Mizpah was operated during the winter and some very good ore was milled at the Heilig Mill on Fairbanks Creek, and later a headframe and steam hoist were installed at the mine and development work continued. On the Whitehorse & Yellowjacket some development work was done during the winter months and about thirty tons of ore was shipped to the mill.

At the head of Too Much Gold Creek, McNeil & Huddelson took out considerable ore and did extensive development work on a very promising ledge of gold-bearing ore.

The American Eagle claim, Fairhaven & Foss, drove an adit 450 feet to undercut the lode during the winter and extracted considerable ore in the summer.

On the McCarthy property on the divide between Fairbanks Creek and Chatham Creek, 30 tons of gold-bearing ore was mined during the winter and early spring of 1915 and shipped to the mill.

The Homestake mine at the head of Wolf Creek was worked under a lease. The ore produced was from a rich vein that averaged only five inches in width. About fifty tons were mined and milled, which is said to have yielded over $100 per ton.

The Chatham mine was operated for antimony, there being a lode of that ore having an average width of four

feet. One hundred tons were shipped from this mine to San Francisco during the summer. The ore was hauled to the railroad by team, and from there to Fairbanks by the Tanana Valley Railway. From there it was shipped on barges to St. Michael and loaded on steamship for San Francisco.

The Wild Rose and Soo mine was worked during the winter months and the mill run whenever ore was available. Twenty-four tons of ore was milled.

On the Wyoming and Colorado mines development work was done during the winter, and 39 tons of ore shipped to the Chatham mill and milled.

In the Ester District the most important work done was that of Tyndall, Finn & McLaughlin on the Bondholder and Yellow Jacket claims near the head of St. Patricks Creek. In June, 1914, an adit was started 280 feet lower than the collar of the main Bondholder shaft, and work was continued on it until June 1st, 1915, when it was driven over 600 feet; work was suspended for the summer on account of poor air. From surveys made the adit should under-cut the Bondholder lode at a distance from the portal of 700 feet. The tunnel is 6 1-2 feet high, has 6-foot sills and 4-foot caps with an 18-inch gauge track of 8-pound rails. Steel cars of 10 cubic feet are in use. Tyndall & Finn also did some development work on the Mohawk lode claim. A 6-foot vein was discovered carrying very good values. Three shafts were sunk to a depth of 25 or 30 feet along the strike of the vein.

Antimony was also mined on Treasure creek. The mining here was done by open-cutting the formation, and digging out the ore which occurred in shoots, kidneys and irregular masses along the fissuring. The ore was broken and hand sorted, and no ore carrying less than 50 per cent antimony was shipped. A tramway was built from the mine to the Tanana Valley Railway and the ore trammed to the railway, where it was loaded for shipment to Fairbanks to be loaded on barges for shipment via St. Michael to San Francisco. This mine produced 600 tons of antimony ore. Considerable prospecting was done on a number of other stibnite lodes in the Fairbanks district. If the present high price of antimony continues, antimony ores will become quite a factor in the mineral output of this Territory.

TOLOVANA DISTRICT.

The newly discovered Tolovana district is located about 70 miles in a northerly direction from Fairbanks, and is connected with Olnes, a station on the Tanana Valley Railroad, by a road 60 miles long. Another route of access is by launch up Tolovana River to a log jam, around which a tram has been built. The distance to the log jam by the windings of the river from the Tanana is about 200 miles. Above the log jam a launch can be used for another 20 miles to the head of navigation; thence a wagon can go up the river bars to Brooks, the principal settlement of the district, where there is a postoffice and a wireless telegraph station. The Tolovana district was visited early in April by way of the Olnes route; several properties on Livengood, Olive, Ester Creeks and Tolovana River were also visited. The richest deposits found up to that time were on the first and third tier benches off No. 5 above on Livengood creek, and Discovery, Olive Creek. It has since developed that most of the gold mined during the season was taken from the bench off No. 5 above on Livengood, third tier. The depth to bedrock on this claim was 97 feet, while on No. 28 above, third tier benches, it was 32 feet and on the third tier benches off discovery the depth was 102 feet. .The depth to bedrock on the first tier benches off No. 5 above discovery was 28 to 30 feet. There were several holes sunk on those claims. On the present creek bed of Livengood several claims were visited where work was being done, but up to the time of visit no pay had been found. The auriferous gravels are widely distributed in the district, and the work already done has proved the presence of workable placers. The value of the gold output for the year 1915 was approximately $40,000.

Circle District.—The principal operation in the Circle district was the installation and operation of a dredge on Mastodon Creek. A number of hydraulic plants were also operated as well as a large number of smaller placers.

Tenderfoot District.—The Tenderfoot district was visited early in May. The principal productive creeks of this district in 1915 were Tenderfoot, Democrat, Banner and Buckeye. Nos. 4 and 5 Tenderfoot Creek, were the principal producing claims. The ground is 70 feet deep and drifting methods were used. The ground is frozen. There were about 75 men employed in this district.

HOT SPRINGS DISTRICT.

The Hot Springs District was visited in January. Very little work was under way at the time. Development work was being done on Woodchopper Creek, where very good prospects were found and the ground was being blocked out for summer operations. The other principal creeks where work was being done were Deep Miller, Sullivan and Cache. Reports after the close of the season would indicate an output of gold to the value of approximately $600,000. There was a small production of stream tin in connection with the gold mining.

RUBY DISTRICT.

The Ruby district was visited in June and 16 properties were inspected. The principal creeks are Poorman and Flat, in the Poorman district, and Long Creek, in the Long Creek district. Placer mining was done also on Birch, Trail, Tamarack, Spruce, Tenderfoot and Duncan Creeks. New pay was found on Spruce Creek early in the spring and several operators were preparing to hoist pay on that creek. Extensive prospecting was done on Greenstone Creek with a drill, and a dredge will be installed in the spring of 1916. The value of the gold output for the year 1915 was approximately $800,000, or about the same as 1914.

THE KOYUKUK DISTRICT.

The Koyukuk district was not visited during 1915 by the inspector. The estimated production of gold from that district for the year is $300,000. The most of this was taken from Hammond River and Nolan Creek. A new discovery of placer gold was made on Jay Creek, a tributary of Wild River and here considerable gold was mined.

INNOKO DISTRICT.

The Innoko district is estimated to have produced gold to the value of $190,000 in 1915. The principal producing creeks were Ophir, Yankee, Little, Spruce, and Gaines. Two scraper plants were operated on Gaines and two on Yankee Creeks, during the mining season.

IDITAROD DISTRICT.

The Iditarod district was visited during the month of June. Eleven placer mines and two dredges were in-

spected. All of the placer mines were operated by the open-cut method. Four steam scraper plants were operated; two on Otter, one on Glen and one on Flat creeks. Open-cut hydraulic mining was done at the heads of Flat Creek, Chicken Creek and Happy Creek. One of the dredges was operated on Flat Creek and one on Otter Creek. The principal creeks are Flat, Otter, Glen, Willow and Black, where about 500 men were employed. A dragline scraper was installed on Willow Creek during the summer, the first to be used in placer mining in Alaska. It is reported to be very successful. The gold output for this district was $2,050,000 or practically the same as 1914. The high cost of fuel is one of the greatest drawbacks of this district. Wood costs from $10 to $18 per cord delivered at the boilers. Distillate, which is used on one of the dredges, costs 52c per gallon, delivered at the dredge. At the power plant of the Yukon Gold Company on Flat Creek, the supply of wood in the vicinity of the power plant became so small that a new location on the Iditarod river was selected and a power plant constructed. New boiler equipment was installed, consisting of three 200 h. p. units. The electric equipment used at the Flat Creek power plant was moved during the winter and installed. It was ready for operation at the opening of the mining season. The new plant will have the benefit of cheaper fuel and improved water conditions, which will not only lower the power cost but will make it possible to operate later in the season, if the weather conditions permit.

MARSHALL DISTRICT.

The Marshall district was visited in the latter part of June. One placer claim on Wilson Creek and one on Disappointment Creek was being operated by the open-cut, ground sluicing, and pick and shovel methods. Gold was discovered on those creeks in 1913. In 1915 gold was discovered on Willow Creek, in this district, and active prospecting and development work was being done on four claims on that creek at the time of visit. Those were being worked by the open-cut methods. One bench claim was being worked by the underground drifting method of mining. The ground being frozen on the bench; the ground in the creek bottoms was thawed. Some development work was done on a quartz vein near the head of Willow Creek. A return of $80 per ton was received from the mill test of the ore. There were 150 men in the district. The gold output for the year is estimated at $10,000.

SEWARD PENINSULA.

The Seward Peninsula mines produced gold to the value of $2,900,000 in 1915 against $2,705,000 in 1914, an increase of $195,000. In addition to the gold production there was shipped 157 tons of tin ore, valued at $79,471, and 132 tons of antimony ore, valued at $30,360. There were 33 dredges operated on Seward Peninsula in 1915 against 39 in 1914. The reason assigned for the decrease is that a number of dredges have worked all of the gravel that could be worked at a profit in the immediate vicinity; and no new ground having been acquired are necessarily idle. There were four dredges installed on Seward Peninsula during the year. One on the Kougarok River, one on Camp Creek, one on Center Creek and one on Buck Creek. The first three were gold dredges; the other was used for tin only, in the York district.

There was a new discovery of placer gold on Dime Creek in the Council District, a tributary of the Koyuk River; but there was no output of gold this season. Late in the fall a gold quartz strike, which promises to be of some importance, was made on Boulder Creek, a tributary of Snake River, at a distance of about 12 miles from Nome. Some of the ore showed an abundance of free gold, visible to the naked eye. There was 157 tons of cassiterite, or tin ore, shipped from the York district. In this district development work was continued on the cassiterite lode tin mine on Lost River, 80 feet being driven on the lower adit. Some development work was done on the Bartels lode-tin mine on Cape Mountain, also a new lode. On Potato Mountain, near the head of Sutter Creek, a tributary of Buck Creek, some placer tin was recovered by the sluice-box method during the summer season.

Late in the season work was started and mining continued on the Sliscovich antimony mine on Manila Creek, a tributary of Nome River, and a small shipment of stibnite made. This ore carries considerable gold. Some stibnite was mined at the Hed & Strom properties, a few miles north of the Sliscovich property and shipped. A placer gold strike was made on the coastal plain near Solomon River, supposedly the continuation of the third

beach pay streak at Nome. It is located about six miles back from the present beach and lies at a depth of 40 to 50 feet below the surface. The bedrock elevation above the present beach is from 62 to 70 feet. The bedrock elevation of the third beach at Nome is 68 feet above the present beach level. The ground had been drilled during the summer season and some very good values found. Fuel and supplies were landed at Solomon before the close of navigation, and developments during the winter should prove the value of the placer gold deposits.

NOME DISTRICT.

The Nome district was visited during July and August. Fourteen underground placer mines, four hydraulic mines and nine dredges were inspected. The principal creeks are Little, Anvil, Dry, Bangor, Boulder, Center, Dexter Hastings and Hobson. Most of the underground placer mines were situated on the tundra, adjacent to Nome, within a radius of three miles. In addition to the creeks named, there were several operations on smaller creeks. The present beach claimed considerable attention, about 100 men being employed with surfwashers, gasoline plants, and sluicing with water gathered from the adjacent tundra.

SOLOMON DISTRICT.

In the Solomon district, five dredges were operated against nine in 1914. Two hydraulic mines were operated on the tributaries of Solomon River. The beach gold discovery is referred to elsewhere.

CASADEPAGA DISTRICT.

Two dredges were inspected in the Casadepaga district. Three were operated in 1914. The Willow Creek dredge suspended operations. In addition to the two dredges, there was some work done on several small creeks, tributaries of the Casadepaga River.

COUNCIL DISTRICT.

There were six dredges operated in the Council district. Two on Ophir Creek and one each on Crooked, Melsing, Camp and Elkhorn Creeks. The Warm Creek and Mystery Creek dredges were idle during 1915. The Camp Creek dredge was a new dredge, installed during the summer and started operations the first of September.

There were two hydraulic plants operated on Ophir Creek and one on Crooked Creek. In addition to these, there were several smaller operations on the different creeks of the district.

FAIRHAVEN DISTRICT.

There were three dredges operated in the Fairhaven district during the season against four last year. One of the dredges on the Inmachuck River was idle. The Fairhaven Ditch and Hydraulic Company operated its property on the Inmachuck, and the Candle Ditch Company its property on Candle Creek. Hydraulic operations were continued on Bear Creek. There were many smaller operations, during the season. About 200 men were employed.

PORT CLARENCE DISTRICT.

Six dredges operated in the Port Clarence district in 1915. The dredge on Windy Creek and the one on Sunset operated for gold only; the two on the Anikovik River operated for tin and gold together. The York Dredging Company's dredge continued working for tin alone on lower Buck Creek. The American Gold Dredging Company installed a new dredge on upper Buck Creek to dredge for tin. This dredge was started the first of September, and consequently operated but a short period during the season. It has a bucket holding two cubic feet in an open-connected line, develops 80 h. p. by distillate engines, and has an estimated capacity of 800 cubic yards.

KOUGAROK DISTRICT.

The Kelleher dredge was operated successfully on the upper Kougarok River during the season. The Bering Dredge Company installed a new dredge on the Kougarok River, near the mouth of Henry Creek, and started operations the first of August. A hydraulic plant was operated on Macklin Creek. Five claims were operated above Taylor Creek by ground sluicing and pick and shovel methods. Two were on Dahl Creek, and two on Coffee Creek. Drilling was done on the lower Kougarok and on Quartz Creek with a view to installing dredges. One hundred men were employed in this district.

PRINCE WILLIAM SOUND.

The high price of copper has caused increased activity

in development of copper properties on Prince William Sound. Four copper properties mined and shipped ore during 1915. The principal shipping mine was the Beatson Copper mine on Latouche Island. The Ellamar was the second in importance. The Threeman mine, on Landlock Bay, and the Fidalgo Mining Company, on Fidalgo Bay, shipped ore during the year. The new aerial tram from the Midas mine to the bay on Port Valdez, a distance of four and one-half miles, was completed; also wharf and bunkers at the coast terminal of the aerial. Several hundred tons of ore were trammed from the dumps at the mine to the bunkers, but no shipment was made for lack of shipping facilities. The lack of shipping facilities was one of the greatest drawbacks.

The Alaska Mines Corporation, a new mining enterprise, has taken over the Schlosser property on Fidalgo Bay and is building a new wharf. It expects to ship ore early in 1916. Extensive development work was done during the latter part of 1915 and several ore chutes of very high grade chalcopyrite ore were crosscut. An aerial tram 2,800 feet long connects the ore bunkers at the landward end of the wharf with the mine. The ore is hand-sorted at the mine.

FIDALGO MINING CO.

The property of the Fidalgo Mining Company is situated on the south side of Fidalgo bay, fifteen miles east of Porcupine Point at the southern entrance of Port Fidalgo. It is about 50 miles by water from Valdez via Tatitlek Narrows. The principal underground workings are on the Winchester and Elgin claims. A trail extends to the mine workings from a cabin on the shore, perhaps 1,000 feet east of the wharf and ore bunkers. The entrance to the lower adit is about 2,500 feet from shore and has an elevation of about 850 feet above sea level. The main development work was done on the lower level, where an adit 450 feet long has been driven and raises connecting the upper adits put in. Stoping was done on all of the levels. A crew of 12 men is engaged, working one shift only. The ore is hand-sorted at the mine. Several shipments were made during the year. The surface improvements on the property consist of a wharf 125 feet long, ore bunkers at the landward end of the wharf holding 2,500 tons of ore, an aerial tram, 2,000 feet long, connecting the lower bunkers with the bunkers and sorting house at the upper terminal of the tram.

ELLAMAR MINE.

The Ellamar mine is situated at the town of Ellamar on the east shore of Virgin Bay, 20 miles southwest of Valdez. The workings are on the Copper King and Gladhaugh claims. Development work was confined to the 100-, 200-, 300-, and 400-foot levels and the stopes between those levels. The mining is by the filling system. All of the ore from the slate-hanging wall to the slate footwall is mined and mucked into chutes. The chutes and manways are run up to within working distance of the ore. The ore is stoped and the stopes filled with waste secured by running raises into both walls. The ore is trammed to the shaft by manpower, raised by steam hoist and stored in ore bunkers, from where it is trammed to the steamers by an aerial tramway erected at the wharf connecting the bunkers with the loading chute. Considerable trouble is experienced from marsh gas (CH_4) and several explosions have occurred severely burning a number of miners. The gas is encountered in the slate walls and appears to follow a fault line of black graphite.

Equipment.—Two 70-h. p. boilers, consuming 25 barrels of crude oil every 24 hours, furnish the steam. A 1,200-foot two-stage compound Nordberg air compressor, operating, condensing, furnishes air for all underground work, drilling machines, mine pumps, etc. A steam hoist is used for hoisting ore and lowering men into the mine to work. A small steam engine furnishes auxiliary service in the machine shop, and blacksmith shop. The mine buildings include superintendent's house, bookkeeper's house, assayer's house, store, office building, assay laboratory, mess house, bunk houses, machine shop, blacksmith shop, shaft house, compressor house, ore bunkers, of 2,200 tons capacity, and oil tanks. An average of 70 men were employed during the year.

THREE-MAN MINING CO.

The property of the Three-Man Mining Company is situated at the head of Landlock Bay. All of the productive work was done on the Keystone claim. The ore is copper pyrites. Several shipments of ore were made ot the smelter during the year. No hoisting ma-

chinery is used at this mine. The ore is mined by hand drilling, and is delivered to the bunkers by a short aerial tram from No. 3 adit to the bunkers,, where it is hand-sorted. The ore is trammed to the wharf by cars from the bunkers, for loading and shipping. Twelve men were employed, working one shift.

BEATSON-BONANZA MINE.

The Kennecott Copper company took over the operations of the Beatson-Bonanza Mine, on Latouche Island. During the year a large plant for the concentration of the lower grade ores, chiefly by the flotation system, was nearly completed at this mine. A new Marcey-ball mill, an Oliver continuous filter press and Ruggles dryers are being installed, the power for which is furnished by two 500 k. w. electric generators. Direct connections are made with two steam turbines, the steam for which is furnished by three large water-tube boilers. Oil is used for fuel. The rated capacity of the mill when completed is 750 tons per day. Development work at the mine was continued as usual by open-cuts, tunnels and drifts. The ore is benched or blasted off from a high cliff at one end of the cut and bulldozed in the open cut. The ore is then sent down through chutes to an adit, 1,400 feet long, driven on the mill level, where it is loaded in cars and trammed by horse power to the mill. The surface equipment consists of mill, blacksmith shop, boiler and engine house, store, bunk and mess houses, and commodious bunkers and wharf for large steamers. The average number of men employed during the year was 170.

Development work was done on several copper properties on Knights Island but no shipment of ore made. On the Dickey Company's property on Fidalgo Bay preparations were being made in December to haul copper ore out to Irish Cove for shipment early in 1916. The mine is about two miles from the landing, on the Cove. Development work was done on several other properties on Prince William Sound.

Four gold quartz mines were operated on Prince William Sound during the year, the Granite, Cliff, Ramsay-Rutherford and Gold King.

The Granite mine, situated on the west side of Port Wells, was inspected December 5th. The mine is operated by the owners, the Granite Gold Mining Company. Development work and actual mining were carried on continuously during the year, employing an average of 60 men. Active mining was being done on six levels. A new adit had been driven 125 feet below the lower working level and a raise driven connecting it with the upper workings, draining the mine by gravity and giving added ventilation; and this plan will eventually do away with the need of an aerial tram to deliver the ore to the mill. A new 10-stamp mill was installed during the year and put in operation, in addition to the 7-foot Chilean mill already installed. The mine and mill are electric lighted. The power plant is located on Hobo Bay and consists of two 80 h. p. boilers which furnish steam to an 80 h. p. ball reciprocating engine driving 160 k. w. generator. The 10-stamp mill is driven by a 60-h. p. generator, and a 12x12x-18 air compressor by a 30 h. p. generator. The concentrating tables are driven by a 6 h. p. motor. Oil is used for fuel. Twenty-four barrels are consumed every 24 hours.

The Cliff mine was inspected December 3rd. It is situated at sea level on the north shore of Port Valdez. It is at the base of a steep bluff, at the east end of a gravel flat, half a mile east of Shoup Bay. The mine is reached from Valdez by gasoline launch. The Mystic No. 1 claim, upon which the work was being done, is operated by H. E. Ellis, the owner. All the work was above No. 1 level, or the main haulage level. There are three levels above this one, and development work was being done on all of them. A lease was let on the surface outcrop of the vein on the opposite side of the hill and some ore was being extracted and trammed to the mill by wheelbarrow, sled and gravity chute. The mill was run intermittently whenever the bunkers or ore bins were full. The lower levels were full of water to sea level. Twenty-one men were employed.

The mill is equipped with 6-stamp Nisson six concentrating tables, 3 boilers, one 60 h. p., one 100 h. p. and one 40 h. p. Wood was being used for fuel. The hoist is 8x10. There is a 60 h. p. reciprocating mill engine, one 10x12 Rand air compressor, one 12x14 tandem Sullivan compressor. The surface equipment consists of bunk and mess houses, change room and shower bath, blacksmith shop, etc.

The Ramsay-Rutherford mine and mill were operated

throughout the year. They are situated about 8 miles, in an air line from Valdez, on a ridge east of Valdez glacier, between Camicia glacier and the next higher large glacier tributary to Valdez glacier from the east, at an elevation of about 3,500 feet.

The Gold King was operated for a short period by the owners during the summer. The mine is situated at an elevation of 3,750 feet on the east end of an ice-surrounded mountain, rising out of Columbia glacier.

THE KENNECOTT-BONANZA.

The Kennecott-Bonanza and Kennecott-Jumbo mines were inspected December 13th and 14th. Mining and development work were carried on at those properties throughout the year. There were 277 men employed, in the mill and surface works of the company, at the time of visit. An average of 109 men were employed underground during the year at the two mines. Both mines have aerial tramways, each 16,000 feet long, connecting the mines with the mill. About 750 tons of ore is mined from both mines every day and trammed to the mill, where it is crushed and the richer ores sacked without sorting or concentration, and the lower-grade ore crushed and run over concentrating tables, and the concentrates sacked for shipment. The larger part of the ore mined is copper glance and covilite, and does not need any treatment at the mill other than crushing and sacking. The carbonate ore is found in the mine to a depth of 700 feet, and probably deeper, as this is the greatest depth attained in either mine. The Jumbo mine incline was just down the 700 level and a station and ore pocket cut. A new leaching plant was being constructed to treat the carbonate ores that are lost in the tailings, from the mill, which contain about one per cent copper. An entirely new process from any ever tried anywhere is being put in and is called the "ammonia process." This is the first plant of its kind ever built for large operations. It is to have a rated capacity of 450 tons per day and consists of 13 iron tanks about 12 feet high. Four are 30 feet in diameter, three 16 feet and six are 12 feet in diameter. They are used for the purpose of condensing the ammonia. The ore shipped gives a return of 74.5 per cent copper.

MOTHER LODE.

Development work was continued on the Mother Lode property, 1 1-4 miles northeast of the Kennecott-Bonanza mine, and on the Westover claim on Dan Creek. The Mother Lode deposit consists of chalcocite and is situated in the same shear zone as the Kennecott-Bonanza mine, but is on the McCarthy Creek side of the ridge between Kennecott Glacier and McCarthy Creek.

A tramway 7,000 feet long conveys the ore from the mine to the bunkers on McCarthy Creek from which it is hauled 14 miles on sleds to the railroad at McCarthy station. Plans have been made and some of the material is on the ground for the construction of a concentrating plant at the lower bunkers on McCarthy Creek. A compressor plant will be installed to furnish power for the mining of the ore, as at present hand-drilling and mining are done.

There was some development work on a number of other copper properties in this district, but no ore was shipped. Such work was also done on claims on Hidden Creek and Lakina River.

Development work was being done on the Era and Glacier claim by the Kennecott Mining Company, preparatory to taking out ore and doing active mining.

CHISANA DISTRICT.

The value of the gold output of the Chisana district for the year 1915 is estimated at $135,000, or about half that of last year. The principal operations were on Bonanza Creek. New discoveries of placer gold are reported to have been made on Dry Gulch, a tributary of Johnson Creek.

DREDGING COMPANIES OPERATING IN ALASKA.

NAME OF COMPANY.	Alaska Address	Name of Manager
Alaska Kougarok Dredge Co.	Taylor	James Kelleher
American Gold Dredging Co.	York	B. Bernard
American Tin Dredging Co.	York	Nels Nelson
Arctic Dredging Co.	Nome	F. Middaugh
Arctic Creek Dredge	Nome	C. Servatius
Bangor Creek Dredging Co.	Nome	C. Mitchell
Bering Dredging Co.	Taylor	John Matthews
Berry Gold Dredging Co.	Circle	J. Hamil
Blue Goose Dredging Co.	Council	A. W. Kittlesen
Camp Creek Dredge	Council	W. Jones
Candle Creek Dredging Co.	Candle	John Sundquist
Center Creek Dredging Co.	Nome	A. Anderson
Ernst Dredging Co.	Nome	Phil Ernst
Fairbanks Mining Co.	Meehan	A. Aarons
Flodine Dredging Co.	Nome	Claus Flodine
Flume Saupe Dredging Co.	Council	Julius Saupe
Fries Dredging Co.	Deering	Hank Fries
*Hastings Creek Dredge	Hasting Crk	J. Belleview
Herron Dredging Co.	Hope	Chas. Herron
Julian Dredging Co.	Nome	V. Julian
Kimball Dredging Co.	Dickson	Chas. Kimball
Kugruk Dredging Co.	Candle	Iver Johnson
Nome Con. M. & D. Co.	Nome	E. E. Powell
Oro Dredging Co.	Council	Chas. Spencer
Ottor Creek Dredging Co.	Iditarod	George Rielly
Pittock Dredging Co.	Teller	——— Carter
Ruby Dredging Co.	Nome	W. W. Johnson
Seward Dredging Co.	Dickson	——— Oglisbee
Wild Goose Min. & Trad. Co.	Nome	Fred Ayers
Windy Creek Dredge	Teller	J. A. Welch
York Tin Dredging Co.	Nome	W. W. Johnson
Yukon Gold Dredging Co.	Flat	A. Austin
*Goose Creek Dredge	Dickson	Dr. Ramsay

QUARTZ MINES OPERATED IN ALASKA.

Southeastern Alaska.

NAME OF COMPANY.	Alaska Address	Name of Manager
Alaska Treadwell Gold Min. Co.	Treadwell	F. W. Bradley
Alaska United Gold Mining Co.	Do.	Do.
Alaska Mexican Gold Min. Co.	Do.	Do.
Alaska-Juneau Gold Mining Co.	Juneau	P. R. Bradley
Alaska Gastineau Mining Co.	Do.	B. L. Thane
Alaska Industrial Co.	Sulzer	C. A. Sulzer
Alaska Free Gold Mining Co.	Knik	Wm. Martin
Alaska Gold Quartz Min. Co.	Do.	Milo Kelly
Alaska Treasure Mine	Juneau	M. Hudson
Algunican Development Co.	Jualin	H. G. Young
Chichagof Mining Co.	Chichagof	J. R. Freeburn
Dunton Mine	Hollis	M. M. Reese
Eagle River Mining Co.	Juneau	B. L. Thane
It Mining Co.	Hadley	Wm. Sweetser
Kensington Mining Co., The	Juneau	B. L. Thane
Mamie Mine	Hadley	Wm. Sweetser
Mt. Andrew Mining Co.	Ketchikan	W. J. Rogers
Pacific Coast Gypsum Co.	Gypsum	Thos. George
Princeton Min. & Milling Co.	Dolomi	B. A. Eardley
Rush & Brown	Kasaan	U. S. Rush
U. S. Smelting & Ref. Co.	Juneau	D. D. Muir

Prince William Sound.

Alaska Mines Corporation	Valdez	E. E. Reitter
Cameron-Johnson Gold Mine	Do.	Sydney Drake
Cliff Mine	Do.	E. H. Ellis
Ellamar Mining Co.	Ellamar	L. L. Middlecamp
Fidalgo Mining Co.	Do.	Wm. Mackintosh
Gold King Mining Co.	Valdez	C. R. Crawford
Granite Mine	Do.	Ray Millard
Kennecott Mining Co.	Latouche	F.R.Van Campen
Landlock Bay Copper Co.	Ellamar	W. A. Rystrom
Ramsey-Rutherford Min. Co.	Valdez	H. Dye
Three-Man Mining Co.	Ellamar	W. A. Dickey
*Irish Cove Copper Co.	Ellamar	W. A. Dickey

Kenai Peninsula.

Gilpatrick Mine	Seward	John Gilpatrick
Gold Stamp Mining Co., The	Hope	J. A. Buzard
Gold Bullion Mine	Knik	Ronald Harris
Kenai-Alaska Gold Mine	Seward	J. R. Hyden
Porcupine Gold Min. Co., The	Porcupine	J. R. Pringle
Primrose Mining Co.	Seward	A. L. Specker

Chitina District.

Kennecott Copper Company	Kennecott	W. A. Seagrave
Mother Lode Mine	McCarthy	W. B. Handcock

Fairbanks District.

American Eagle Mine	Fairbanks	Chris. Foss
Bond Holder Mine, The	Do.	E. Tyndall
Chatam Mining Co.	Do.	Si. Scrafford
Crites-Feldman Mine	Do.	Henry Feldman
Homestake Mining Co.	Do.	G. St. George
Mayflower Mine	Do.	H. Kleinsmith
Mizpah Mine	Do.	A. Hess
McCarthy Mine	Do.	John McCarthy
McNeil-Huddelson	Do.	Mike McNeil
Newsboy Mining Co.	Do.	Louis Golden
Reliance Mining Co.	Do.	——— Spalding
Wyoming & Colorado Mine	Cleary	Tony Goeseman

PLACER MINES OPERATED IN ALASKA.

Seward Peninsula.

NAME OF COMPANY	Alaska Address	Name of Operator
Arctic Mining Co., The	Nome	L. Erickson
Blake Mining Co.	Nome	J. Blake
Candle Ditch Co.	Candle	Leo Lowenhearst
Cordovado & Company	Nome	A. V. Cordovado
Fairhaven Mining Co.	Dearing	G. H. McCloud
Glassner & Nass	Nome	J. Glassner
Gillette & McMillan	Nome	Ben Gillette
Kougarok River—		
No. 6 above discovery	Taylor	J. Shaughnessy
No. 7 above discovery	Taylor	F. Dolan
No. 9 above discovery	Taylor	H. McGonigal
Little Creek	Nome	A. J. Landstrom
Macklin Creek Hydraulic Co.	Taylor	Theo. Nutter
Pioneer Mining Co.	Nome	L. Stevenson
Rydeen Mining Co.	Candle	E. Rydeen
Sunset Mining Co.	Teller	Max Hirshberg
Tundra Association	Nome	O. W. Olson
Vogel & Buckley	Nome	Charles Vogel

Ruby District.

April Fool Claim	Poor Man	C. Cook
Big Four Mining Co.	Do.	H. Morton
Chief Association	Do.	Thomas Smith
Deacon Bench	Long	F. Fernando
Deacon Bench	Do.	Graham
Emma Bench	Do.	W. Labosky
Hagen Fraction	Poor Man	C. W. Kigbush
No 2 Long Creek	Long	Alex. Larson
No. 3 Long Creek	Do.	Frank Johnson
Mascot Bench	Do.	Bert Walker
Novikakit	Do.	J. Buckley
Novikakit	Do.	J. Ward
O. K. Claim	Poor Man	Joe Ward
Olympia Claim	Do.	T. Thompson
Poorman Bench	Do.	H. Coyle
No. 2 Poorman	Do.	J. T. Shorpshear
No. 1 Row Exposition Bench	Do.	H. S. Hopkins
Sourdough	Do.	A. Swanson

Sourdough	Do.	G. Bittle
Sourdough	Do.	J. McCarty
Sutherland Company	Do.	Dan Sutherland
Windy Bench	Long	A. Kelis
Windy Claim	Poor Man	D. McCloud

Iditarod District.

NAME OF COMPANY.	Alaska Address	Name of Operator
Black Creek—		
No. 2 above discovery	Flat	J. Chronister
No. 3 above discovery	Do.	Ira Van Orsdel
Chicken Creek Hydraulic	Do.	A. Matthewson
Glen Gulch—		
No. 1 above discovery	Do.	J. Dawson
Happy Creek—		
No. 9 above discovery	Do.	T. Aikins
No. 10 above discovery	Do.	A. Welch
Otter Creek—Discovery Claim	Do.	R. McMillin
Upgrade, The	Do.	D. Stranberg
Willow Creek Mine	Do.	F. G. Manley
Marshall District.		
Butterfly Bench	Marshall	John Tillie
Disappointment Creek—		
Discovery Claim	Do.	Al Rhodes
Willow Creek—		
Discovery Claim	Do.	F. Bradley
No. 1 above discovery	Do.	Eddie Mack
No. 2 above discovery	Do.	Chas. Gay
No. 1 below discovery	Do	Frank Waskey
Hot Springs District.		
Deep Creek	Tofty	A. Bock
Golden Age	Do.	J. McKinzie
Junction Fraction	Do.	Wm. Albright
Midnight Association	Do.	R. C. Koebsch
Snyder Fraction	Do.	John Jacobs
U. S. Association	Do.	S. Howell
Tolovana District.		
Deep Channel Association	Brooks	H. Patterson
Leitram Association	Do.	Dave Cascaden
Livengood Creek—		
No. 4 above dis., bench	Do.	Gus Conrad
No. 5 above dis., bench	Do.	Kenney & Swanson
No. 6 above dis., 3rd tier bench	Do.	Gus Peterson
No. 10 above dis. 3rd tier bnch.	Do.	C. E. Keene

Olive Creek—		
Discovery Claim	Do.	Wm. Lynch

Fairbanks District.

Alder Gulch No. 1	Meehan	Jacobson & Pearson
Cleary Creek—		
No. 8 above discovery	Cleary	Honk & Company
No. 5 " "	Do.	Leo Roggie
No. 1 below discovery	Do.	Al Hilty
No. 2 " "	Do.	Fulier & Company
No. 3 " "	Do.	Cunningham & Fifer
No. 4 " "	Do.	A. Harstad
No. 6 " "	Do.	Pearson & Johnson
No. 7 " "	Do.	John Carlson
No. 8 " "	Do.	Frank Fenell
No. 10 " "	Do.	A. C. Forseth
No. 13 below dis. 2d tier bnch.	Chatanika	Driscoll Brothers
No. 13 below dis. 3d tier bnch.	Do.	Sam Weiss
No. 14 below discovery	Do.	F. Conley
No. 15 below dis. 3d. tier bnch.	Do.	Alex Neime
No. 15 below dis. 2d tier bnch.	Do.	A. Hanson
No. 16 below discovery	Do.	F. Worland
No. 17 " "	Do.	Keys & Rettig
Day Dawn Association	Olnes	J. Warren
Dome Creek—		
No. 3 above discovery	Do.	J. Canning
No. 2 " "	Do.	Chris Nerland
No. 3 below discovery	Do.	Jack Lokka
No. 3 below dis., lower half	Do.	Rice & Thompson
No. 4 below discovery	Do.	A. Johnson
No. 4 below dis., lower half	Do.	A. Takala
No. 5 below discovery	Do.	Chris Christianson
No. 7 " "	Do.	S. Dockham
No. 8 " "	Do.	Louis Jenson
Ester Creek—		
No. 1 above discovery	Berry	Olson Sullivan
No. 1 " "	Do.	George Ray
No. 1 " "	Do.	H. Short
Discovery Claim, Ester Creek	Do.	H. Weber

No. 2 below discovery	Do.	H. Bussell
No. 5 " "	Do.	Chas. Lind
No. 8 " "	Do.	A. Reaka
Kline Fraction	Do.	C. Kline
L. V. Fraction	Do.	A. Strom
McLaughlin Association	Do.	A. Alms
Pioneer Association	Do.	Hofstad & Christianson
Top of the Ridge Claim	Do.	J. L. Sjolseth

Fairbanks District.

Fairbanks Creek—		
No. 3 above discovery	Meeham	Fred Parker
No. 1 below discovery	Do.	Grille & Griffin
No. 7 " "	Do.	Ludwig Johnson
No. 8 " "	Do.	Jack Stewart
Gold Stream Creek—		
No. 1 above discovery	Gilmore	J. R. Junkins
Discovery Bench	Do.	Robt. Staples
No. 2 below discovery	Do.	Mogan Brothers
No. 2 " " fraction	Do.	D. Koch
No. 3 " "	Fox	H. Faucet
No. 4 " "	Do.	Sol. Williams
No. 8 " "	Do.	A. Melenius
No. 9 " "	Do.	J. Adams
No. 12 " "	Do.	F. Petrok
No. 12 " " fraction	Do.	W. P. Cummings
No. 13 " " bench	Do.	P. Clausen
No. 14 " " bench	Do.	J. Dunn
No. 14 " " 2d tier	Do.	Laloff & Co.
Owl Association, The	Do.	P. Gallosto
Hand Across the Sea	Vault	J. Prest
Hand Across the Sea	Do.	J. Beatty
Happy Association	Fairbanks	C. J. Straus
Happy Association, lower half	Do.	John Fay
Happy Home Association	Berry	Geo. Wheeler
Hard Scrabble	Chatanika	A. D. Thompsor.
Hope Bench	Do.	J. A. Brevig
Little Eldorado Creek—		
No. 1 above discovery	El Dorado	W. H. Props
No. 2 below discovery	Do.	Anderson & Erickson
El Dorado Association, upper	Do.	Wagner & Whaley

El Dorado Association, lower	Do.	C. Nelson
Nigger Head Assn., Dome Cr.	Olnes	Fred Rehn
Oregon Association	Vault	H. Cook
Shakespeare Association	Olnes	Jim Morgan
Vault Creek—		
No. 2 above discovery	Vault	V. Boone
Wolf Creek—		
No. 1 above discovery	Cleary	Larson & Schon
No. 2 above discovery	Do.	Chas. Bloom
No. 4 above discovery	Do.	Olaf Larson
Wickersham Bench	Do.	Sam Sampson

Tenderfoot District.

Banner Creek—		
No. 1 above discovery	Richardson	Isaac Isaacson
No. 4 below discovery	Do.	Robt. Chanquist
Buckeye Creek—		
Discovery Claim	Do.	J. Bason
Democrat Creek—		
No. 2 above discovery	Do.	L. Kelvic
No. 3 above discovery	Do.	A. Saasta
Tenderfoot Creek—		
No. 4 below discovery	Do.	Nels Riems
No. 5 below discovery	Do.	Ed. Hearn