

REPORT
OF THE
MINE INSPECTOR FOR THE
TERRITORY OF ALASKA

TO THE
SECRETARY OF THE INTERIOR

FOR THE FISCAL YEAR
ENDED JUNE 30

1912



February, 1913.

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LETTER OF TRANSMITTAL.

JANUARY 24, 1913.

The SECRETARY OF THE INTERIOR.

SIR: I have the honor to transmit the first annual report of the mine inspector for Alaska. Because of the distances that separate some of the mining camps, the difficulties of travel, the lack of an adequate mining law in the Territory, and the time required to get in touch with mine owners, the inspector found it impossible to obtain information regarding safety conditions at many mines, and his report is necessarily brief. Fuller details and a more comprehensive review of mining methods in the Territory will be presented in his report for the current fiscal year.

Very respectfully,

JOSEPH A. HOLMES,
Director Bureau of Mines.

REPORT OF THE MINE INSPECTOR FOR THE TERRITORY OF ALASKA FOR THE FISCAL YEAR 1912.

SIR: On April 19, 1911, under authority given by the act making appropriation for the sundry civil expenses of the Government for the fiscal year 1912, the President appointed a mine inspector for the Territory of Alaska to serve under the direction of the Bureau of Mines. The provisions of the act for the protection of the lives of miners in the Territories (26 Stat., 1104, amended by 32 Stat., 631) were extended to Alaska by an act of Congress (35 Stat., 226) on May 22, 1903. The appointment became effective July 1, 1911.

SITUATION OF HEADQUARTERS.

Juneau, the capital of Alaska, was named as the headquarters of the mine inspector, and a temporary office was provided in the courthouse through the courtesy of the Department of Justice. Congress has made an appropriation for a new Federal building, and application has been filed for accommodations in it for the permanent housing of the office.

NEEDS OF OFFICE.

There is need of assistance, both clerical and in the field, for at present mail must be forwarded from Juneau to the inspector at distant points and many times reforwarded, so it is often months before answers can be given. At present in case of accident, investigation must be delayed until the arrival of the inspector, on his regular trip, as otherwise the other districts would be slighted. By the time the inspector arrives the facts of the case are obscured. Local deputies should be assigned to the districts containing the largest number of men, and assistance should be available in case of a stampede to a new district. To illustrate, in October, 1911, a shaft in the Fairbanks district caved, imprisoning 13 men. At this time the mine inspector was at Ketchikan, in southeastern Alaska, and could not have reached the scene of the accident until three weeks after it happened. By that time the causes would have been as much obscured as on his regular trip a few months later.

The opening of new districts before the operators have become familiar with the ground and the closing of old districts, when work is largely reduced to robbing pillars and mining odd bits of pay that have been left by previous operators, represent the most disastrous periods in the history of mining camps, and mine inspection during such periods should be carried on with due regard to the extra hazards.

LABOR CONDITIONS.

There has been an ample supply of labor over the entire Territory for the amount of development undertaken, a considerable excess being noted in some of the districts. In the districts where lode mining predominates, the living conditions are usually good, in some places exceptional care being taken to insure the men's health and comfort, but in the placer districts the work is intermittent, and in many camps conditions are decidedly insanitary about the bunk houses. Poor living conditions tend to drive out the better class of laborers and increase the proportion of those who have less pride in their work, and thus have an effect in increasing the number of mine accidents.

The scale of wages varies from \$3.50 per day for miners along the southeastern coast to \$5 and board in the Fairbanks district. At Nome \$5 and board is standard for summer and \$3 to \$4 and board for winter.

It must be remembered that although some of the placer mines operate the entire year, most of them are idle at least six months of the year so that the average wage, when compared with the high cost of living in these districts, is not high.

Hours vary from 8 to 12, with a 10-hour shift predominating.

During the period covered by this report there was no suspension of work owing to strikes or lockouts.

ORGANIZATION OF MINE-RESCUE AND FIRST-AID TEAMS.

The Treadwell companies on Douglas Island have equipped the properties with three Draeger 1907 oxygen helmets, and a corps has been drilled in their use by the Territorial mine inspector. Training in first aid to the injured has been taken up by some of the miners, and the management has offered the services of a physician if the men will keep up the work. At a number of the other lode mines a start has been made in mine-rescue and first-aid work, and it is hoped that some organization of first-aid training will be accomplished in the placer mining districts during the winter of 1912-13.

VISITS TO COAL FIELDS.

The Bering River and Matanuska coal fields were visited in company with Dr. J. A. Holmes, Director of the Bureau of Mines, and several of the bureau's consulting engineers, as was stated in Bulletin 36 of the bureau. No active development was being done at any of the properties at the time of this visit. No attempt was made to visit the coal fields of the Alaska peninsula, Nenana, Cook Inlet, or Seward Peninsula on account of the lack of time and the small amount of work attempted in these districts.

DISTRIBUTION OF PUBLICATIONS.

A number of the publications of the Bureau of Mines have been distributed directly from the mine inspector's office and the names and addresses of those wishing to receive these publications have been forwarded to Washington.

WORK OF INSPECTOR.

Lack of time and climatic conditions have prevented the inspector from visiting all the mining districts within the allotted time, but the parts of the country in which the greatest number of men have been employed underground have been inspected at least twice within the period covered by this report. The operators have been told the requirements of the law under which the mines are inspected and have had their attention called to such changes in methods or equipment as might be necessary to conform to it. The atmosphere underground in a number of placer mines has been sampled and sent to the Bureau of Mines laboratory at Pittsburgh, Pa., for analysis. It is hoped at some later date to publish complete data on the gases in the atmosphere underground and on the amount of rock dust in the air in the lode mines. The gathering of information has been confined to data directly pertaining to the health and safety of the men, the methods of mining, and the costs of freighting and supplies in the various districts. No attempt has been made to duplicate the work of the United States Geological Survey as described in its annual publication entitled "Mineral Resources of Alaska."

SOURCES OF ACCIDENTS.

The information available regarding accidents is limited and accurate conclusions therefrom are difficult, but it gives the impression that the greatest number of injuries can be traced to falls of ground or to men being thrown from the bucket while being hoisted. Careless and ignorant handling of high explosives has added its share to the total number of injuries.

RECOMMENDATIONS LOOKING TO PREVENTION OF ACCIDENTS.

It is the earnest desire of the mine inspector to see the present Territorial mining code completely revised, as it was formulated for coal mining only; hence many necessary precautions in metal or gravel mining are not included in the act. Moreover, if the present law were enforced to the letter every mine in Alaska would be closed. The following recommendations are offered as covering the most pressing needs:

(1) A competent employers' liability law should be passed for Alaska, so that injured men or families left destitute will not become wards of the public.

(2) A law should be passed that would make every person in and about a mine subject to prosecution and punishment for any breach of discipline whereby the life of that person or the lives of others might be endangered or whereby property might be injured or destroyed.

(3) It should be made a criminal offense to allow an inexperienced man to handle high explosives or to give him a place in the mine where he could place and drill holes, load them with powder, and fire them.

(4) Any mine owner or operator of any mine employing over five men during any portion of the year should be required to register with the mine inspector the name and location of the mine, the

names of the owner and of the manager or superintendent, post-office addresses, number of men working, and dates of operation.

(5) The mine inspector should have authority to distribute blanks requiring statistics of accidents, labor, and production to be filled in by the mine owner or operator and returned to the inspector's office under penalty of a fine for neglecting to fill out and return blanks or for making false statements.

(6) Section 15 of the laws relating to the protection of the lives of coal miners in the Territories should be amended to read:

That in case of accident, either fatal or serious enough in character to prevent the injured person from working three consecutive days, a full report in writing shall be made by the mine owner or operator to the mine inspector, such report in case of fatal accident to be made within two days, and in case of nonfatal accident within five days: *Provided*, That if death shall result within six months from any accident reported as nonfatal, the same shall be reported to the mine inspector as fatal at the time of death of the victim: *Provided further*, That in case of fatal accident a similar report shall be made to the United States commissioner (coroner) of the district in which death shall occur, and that he shall transmit notice of such death to the mine inspector.

(7) The management of any private or public hospital in the Territory should be compelled under penalty to report to the mine inspector any death occurring in such hospital due either to accident or disease brought on by conditions under which the deceased labored in or about the mines.

(8) All hoisting engineers who raise or lower men in both metal mines and nonmetalliferous mines, and all foremen and fire bosses in charge of underground work in coal mines, should have certificates of competency, such certificates to be issued on examination by the Bureau of Mines through the mine inspector's office; provided, that the mine inspector should be allowed to grant temporary certificates covering such period till it is convenient to give such examination.

(8) The mine inspector should be empowered to revoke the certificate of any hoisting engineer, foreman, or fire boss who is found not enforcing the law or the mine inspector's orders.

(9) The Director of the Bureau of Mines should be empowered to assign such assistants to the mine inspector as he may deem necessary for the proper carrying on of the work.

A tentative draft for the revision of the mine-inspection law in the Territories was submitted by Jo E. Sheridan, former United States mine inspector for New Mexico, and in the proceedings of the American Mining Congress for its thirteenth annual session a draft for a law to cover mine inspection in metal-mining States was printed. It is recommended that a committee of engineers from the Bureau of Mines be appointed to combine these two drafts and thus prepare a draft for a comprehensive law covering inspection of all types of mines in the Territories.

ACCIDENTS DURING THE YEAR.

The amount of data collected regarding accidents is small and until the mine inspector is given some assistance, both clerical and in the way of local inspection, it will be impossible to submit accurate figures. The hospital records show that the largest percentage of injuries is caused by falling ground, though accidental explosions and breakage of hoisting cables contribute their share. There are about

5,000 men at work underground in the Territory, though twice that number, both underground and on the surface, are connected with mining. During the period covered by this report 12 fatal accidents were reported. Brief details are recorded below. No attempt has been made to present details of nonfatal accidents because the present law does not compel the operators to report such accidents, and the data available from private sources are incomplete.

During the early part of October, 1911, the shaft at the Letender Brothers lay on 19 Below, Dome Creek, in the Fairbanks district, caved, imprisoning 13 men. The shaft had been sunk five years before and was 170 feet deep, the present operators using it for "sniping" (robbing pillars) in ground that had been worked several years before.

One side of the shaft, which was sunk through sand and gravel, had thawed by the heat of the steam pipes and gradually sloughed away, leaving an open space about half way down. The gravel on the opposite side was thawed and softened by a warm rain till its weight forced the light timbers out of place into the space formed by the sloughing. The displacing of the timbers allowed the loosened gravel to run and fill the shaft, which was the one entrance to the mine.

A crew of men was set to work cleaning out the caved shaft and a churn-drill hole started in solid ground. The imprisoned men were fed within 24 hours and taken out of the churn-drill hole, which was sloughed out large enough to permit the passing of a man, at the end of 90 hours.

That an accident of this kind happened was entirely due to the carelessness of the operators, who should have put in proper timbers when the shaft began to slough.

FATAL ACCIDENTS.

Tripko Delebalich, Montenegrin, age 29, killed July 22, 1911, by a fall of rock in the Ready Bullion mine, Treadwell.

Joseph Dunn, Russian, age 33, was killed August 29, 1911, by a cave-in in the Iditarod district.

Rodrick McDonald, Scotchman, age 29, was killed October 27, 1911, by falling from a gin pole while repairing a guy line at a claim on Ester Creek, Fairbanks district.

Pete Velich, Montenegrin, age 25, was killed October 31, 1911, by falling down an unprotected chute at the LaTouche mine of the Beatson Copper Co., Latouche.

L. J. Bucklear, American, age 30, was killed November 6, 1911, by a blast, while employed on the claims of the Alaska Copper Co., on Dan Creek.

John Nelson, Scandinavian, age 50, was killed December 23, 1911, by falling down a shaft in the Nome district.

C. J. Demeroutis, Greek, age 29, was killed February 9, 1912, by a premature blast, while tamping a hole in the Mexican mine, Treadwell.

George Riedi, jr., German, age 30, was killed February 15, 1912, by being caught in a moving belt in the 300 stamp mill, Treadwell.

Antone Martin, Italian, age 32, was thrown from a bucket by falling ground on No. 5, Treasure Creek, Fairbanks district, February 24, 1912, and died from his injuries April 9.

Richard Burnett, Englishman, age 46, was drowned under a dredge May 12, 1912, in the Nome district.

J. E. Davis, shift boss in the Perseverance mine, in the Juneau district, was killed June 2, 1912, by being crushed between timbers and a moving trip of cars.

Mike Cannon, Irishman, age 40, was killed by a falling slab of roof June 29, 1912, on claim 3, below Ester Creek, in the Fairbanks district.

MINES INSPECTED DURING THE YEAR.

SOUTHEASTERN ALASKA.

The mines of southeastern Alaska, including a part of Kenai Peninsula and Prince William Sound, were visited during the summer and fall of 1911. Brief notes on the mines visited are given in the pages following.

In view of the excellent work of Dr. Alfred H. Brooks and his assistants of the United States Geological Survey covering the geological description of the mining districts and the summing up of the mineral output of the Territory in Mineral Resources of Alaska no attempt was made by the mine inspector to collect data on mineral output, though it is the custom of State mine inspectors to publish such data in their reports. Several tables from Bulletin 520 of the United States Geological Survey are incorporated in this report to set forth the magnitude and importance of this industry in Alaska.

Attention was directed entirely to the safety of the men underground and on the surface, the sanitary conditions under which they were compelled to live, and in calling the notice of both employer and employee to the mine-inspection laws that went into effect in the Territory on July 1, 1911. Inquiry was made of the various hospitals and physicians in the districts covered as to the injury to the health of the miners from rock dust, but no authentic case of death or even sickness was traced to this source. However, the danger to health from breathing rock dust is now well established. The United States commissioners, who act as coroners in their districts, and those in charge of hospitals have been asked to cooperate with the inspector in procuring data regarding loss of life, impairment of health, or serious accident to the miner.

TREADWELL GROUP.

The Treadwell group of mines on the shore of Gastineau Channel is working a gold lode. The group consists of the Alaska-Treadwell, the Mexican, the 700, and the Ready Bullion mines, owned by the Alaska-Treadwell, Alaska United, and Alaska-Mexican Gold Mining Cos. The properties are contiguous and under one management. The famous "glory hole" at the Alaska-Treadwell, has been abandoned and the ore for the mills is drawn entirely from the underground workings, which are connected from one mine to the adjoining properties for ventilation and for distribution of supplies. Pillars alternate with stopes. The latter are worked on the full-breast system, only enough ore being drawn from the chutes to provide working room between the broken ore and the roof. The air underground is somewhat impure, as the gaseous products from the large amount of explosive used remain in the workings. There is no artificial ventilation other than the exhaust from the drilling machines. The production of float dust has been minimized by the installation of special drilling machines that employ a water jet, which wets the dust automatically as the drilling proceeds.

Explosives.—Powder is unloaded directly at the Ready Bullion wharf, about 1 mile from town, and stored in a large magazine, whence it is distributed daily to underground magazines, which are

locked and under the supervision of powder bosses. The approach to the underground magazines is guarded by a red light.

Mill equipment.—There are 900 stamps with an approximate duty of 5 tons per 24 hours in the mills, and a 100-ton cyanide plant, which treats the concentrate from the stamps.

Living accommodations.—Cottages and rooming and boarding houses with reasonable rates are provided by the company for the employees, who number between 1,600 and 1,800. It is optional with the men whether they board with the company or elsewhere.

Rescue apparatus.—A pulmotor and three Draeger 1907 helmets have been provided by the company, and a team has been instructed in their use by the mine inspector.

Treadwell Club.—An association of employees known as the Treadwell Club has erected a building 56 feet wide by 206 feet long, which contains a reading room, pool and billiard room, bowling alleys, an auditorium with a seating capacity of 500, baths, and lavatories. A natatorium containing a swimming pool 70 by 30 feet, tub, shower, and steam baths is maintained in conjunction with the club. The membership fee is \$1 per month, which entitles the members to all privileges of the club and free admission to the entertainments.

On July 21, 1911, the Treadwell, Mexican, and 700 mines were inspected. On July 22 the inspector assisted in removing the body of Trippo Delebalich, miner, from the sixteenth level of the Ready Bullion mine. As noted (p. 11), he was killed by a slab from the roof while working in this stope. On July 24, 1911, the Ready Bullion, Mexican, and 700 mines were inspected. On August 10, 1911, in company with Dr. J. A. Holmes and consulting engineers of the Bureau of Mines, the inspector examined portions of the Treadwell, 700, and Mexican mines.

ALASKA-PERSEVERANCE MINE.

The Alaska-Perseverance is a lode gold mine owned by the Alaska-Perseverance Gold Mining Co. It is situated near the head of Silver Bow Basin, about 4 miles from Juneau, and is making a wide fissured zone in a slate that contains numerous lenses and veinlets of quartz. The mine is opened by a 1,400-foot crosscut with a 940-foot raise to the surface; the raise provides excellent ventilation. An 11,000-foot tunnel has been started from Sheep Creek, which will give 1,300 feet additional back of ore and provide an outlet on tidewater. The company was reorganized recently, and plans are under way to work throughout the year.

The surface plant and underground workings were inspected on July 26, 1911.

Mill equipment.—The mine is equipped with a 100-stamp mill with foundations for 40 additional stamps in place, power being supplied from the Gold and from Lurvey Creeks, under 340 and 660 foot heads, respectively. At present the concentrate from the mill is shipped to the smelter for treatment. A concrete powder house has been constructed, with a separate thawing house, both of which are locked and are under the supervision of the shift boss or foreman. A steam-heated rooming and boarding house, with change rooms and bathing facilities, is provided for the men, with a dwelling house for the staff. Seventy men have been employed at the property during the summer the last few years, the plant being shut down during the winter for lack of water.

ALASKA JUNEAU MINE.

The Alaska Juneau mine, situated about 3 miles from Juneau in Silver Bow Basin, is under the same management as the Treadwell group. The ore body consists of a large fissured zone in slate, filled with lenses and veinlets of quartz. The mine is worked as an open cut and is equipped with a 30-stamp mill. A deep tunnel has been started from Gold Creek that will crosscut the ore body, and a tram will be constructed from the mouth of the tunnel to a point on Gastineau Channel, where a new mill will be constructed. Mess and bunk houses are provided at the mine; the men working at the tunnel live in Juneau. Fifteen to twenty men are employed six months of the year.

I inspected mine and surface plant on July 31, 1911.

EBNER MINE.

The Ebner mine, operated by the California-Nevada Copper Co., is working a gold-bearing lode about 2 miles northwest of Juneau. It was idle at the time of my visit, but a crosscut had been started from Gold Creek that would tap the orebody lower than the present workings. Twenty-four men are employed only a part of the year.

On August 3, 1911, I inspected the deep crosscut.

JUMBO MINE.

The Jumbo or, as it is commonly known, the Sulzer copper mine of the Alaska Industrial Co. is situated on the Hetta Inlet on the west coast of the Prince of Wales Island, at an elevation of 1,500 feet. The orebodies so far opened have been under the surface of a limestone cliff and many of them have been worked as open cuts. These cuts are operated during the summer months, the underground development being reserved for the winter. The ore, which is mainly chalcoppyrite, is carried from the mine to the bunker on tidewater by an 8,000-foot aerial tram, and shipped from there to the smelter. Power is furnished by a hydroelectric plant on the shore of the inlet. The company operates a mess and bunk house at the mine, with a store and hotel at the town of Sulzer. Thirty-eight men are employed in or about the mine.

The surface plant and underground workings were inspected on September 26, 1911.

MOUNT ANDREW MINE.

The Mount Andrew mine of the Mount Andrew Iron & Copper Co. is a copper mine situated 3,600 feet from tidewater on the north shore of Kasaan Bay on the east coast of Prince of Wales Island. The ore consists of chalcoppyrite-magnetite lenses in an altered limestone. It has been opened by a crosscut with raises to the surface workings and stopes. A winze has also been sunk to prospect one of the orebodies and a crosscut has been started that will tap the mineralized zone several hundred feet lower than the present workings. A steam power plant is situated on the beach, and the bunkers at the mine are connected with the wharf by an aerial tram. Cottages, bunk houses, and mess houses are provided by the company.

The surface plant and underground workings were inspected on September 27 and 28, 1911.

IT MINE.

The It mine of the It Mining Co. is situated about 1 mile from tidewater on the north shore of Kasaan Bay on Prince of Wales Island and is connected to bunkers at the wharf by a surface tramway. It is a copper mine and has been worked by open cuts and overhand stopes. At present the force is concentrated on a crosscut that will tap the mineralized zone several hundred feet below the present openings where a chalcoppyrite-magnetite ore has been found in an altered limestone. The crosscut is ventilated by the exhaust from the drills and by hydraulic suction. Bunk houses and mess houses are provided by the company, which employed 20 men when the surface plant and underground workings were inspected, September 29, 1911.

RUSH & BROWN MINE.

The copper mine owned by Rush & Brown is connected with the wharf and bunkers on Kasaan Bay by a 3-mile tram over which the cars from the mine bunkers are hauled by a small locomotive. The ore bodies are chalcoppyrite and chalcoppyrite-magnetite in or near a contact zone between a granitoid rock and a greenstone. They have been opened by a shaft and two levels from which are stopes to the surface providing excellent ventilation. Both bunk houses and mess houses are provided by the owners, who employed 10 men when the surface plant and underground workings were inspected on September 30, 1911.

LON DE VAN MINE.

On Georges Inlet, southwest of Ketchikan, is the lode gold mine of the Lon De Van Mining & Milling Co. A crosscut is being driven to intersect several quartz veins which apex on the claims. A compressor plant driven by water power furnishes air for the drills and ventilation. Twelve men were employed at the date of inspection, October 2, 1911.

VALPARISO MINE.

The Princeton Mining & Milling Co. which owns the Valpariso mine, a lode gold mine at Dolomi, on Prince of Wales Island, has opened the property by a 280-foot shaft on the vein and three levels, with a raise to the surface for ventilation. The ore, a high-grade gold-bearing quartz, lies at the contact of a schist and a dolomitic limestone and up to the present time has been shipped to the smelters for treatment. Living quarters and mess are provided by the company. Eighteen men were employed by the company when the surface plant and underground workings were inspected, October 3, 1911.

ALASKA TREASURE MINE.

The Alaska Treasure Gold Mining Co. is developing the Alaska Treasure, a lode gold mine about 3 miles southeast of Treadwell, under bond from the Alaska Treasure Consolidated Gold Mining Co. A crosscut has been driven to the mineralized zone, and an experimental five-stamp mill is under construction. Power is generated at a steam plant on the beach. Bunk and mess houses are provided by the company. The company employed 12 men at the date of inspection, October 14, 1911.

GYPSUM MINE.

The Gypsum mine of the Pacific Coast Gypsum Co., which is situated at Gypsum, on Chichagoff Island, is connected to ore bunkers at tidewater by a 1-mile railroad. The mine is opened by a 160-foot shaft, from which two levels are driven and a raise put through to the surface for a second exit and ventilation. The stopes, which alternate with pillars, are worked on the full-breast system, only enough of the broken product being drawn through the chutes to give working room between the ore and the roof. The company provides rooming and mess houses and carries its employees from the living quarters at the beach to the mine on the railroad. The company employed 25 men when the surface plant and underground workings were inspected on October 21 and 22, 1912.

CHICHAGOFF MINE.

The vein in the Chichagoff mine of the Chichagoff Mining Co. is a high-grade gold-bearing quartz occupying a shear zone in a graywacke. Rich float found on the beach led to the discovery of the mine in 1905. The mine has been developed rapidly. Four levels have been opened by drifts and a winze, and a raise has been put through to the surface for ventilation. A 10-stamp mill has recently been completed, and in conjunction with the Golden Gate Mining Co. a 150-horsepower hydroelectric plant has been installed at Sister Lake, whence power is transmitted a distance of $4\frac{1}{2}$ miles to the mines. The tailing from the mill is being impounded and will be cyanided at some future date, the concentrate being shipped to the smelters. The company provides bunk and mess houses, cottages, and a change room with bathing facilities for the men. Twenty-five men were employed at the date of inspection of the surface plant and underground workings, October 28, 1911.

GOLDEN GATE MINE.

The Golden Gate, a lode gold mine owned by the Golden Gate Mining Co., but under bond to the Chichagoff Mining Co., is supposed to be working an extension of the Chichagoff vein. Three levels have been opened by drifts on the vein and a 3,200-foot aerial tramway is built to the mill on the beach. The mill was idle at the time of my visit. Bunk and mess houses have been provided by the company for 12 men.

The surface and underground workings were inspected on October 29, 1911.

EAGLE RIVER MINE.

The Eagle River group of lode gold mines belongs to the Eagle River Mining Co. It is situated at Amalga, about 30 miles north of Juneau and 7 miles from tidewater, on the Lynn Canal, to which a horse tramway has been constructed. The mine has been opened by 10 levels with raises for ventilation, though at the time of my visit only development work was in progress, the mill being shut down for the winter. Twenty stamps were kept dropping intermittently during the eight months of the year the mine was under active development. Cottages, rooming houses, and mess houses are provided by the company. There were 37 employees eight months of the year.

The new development and part of the old workings were inspected on November 17, 1911.

KENSINGTON MINES.

The Kensington Mining Co. has recently consolidated a number of the older lode gold properties in the Berners Bay district, 60 miles north of Juneau on the Lynn Canal, and has been rehabilitating the mines and surface works during the past summer. Ten stamps in the 40-stamp mill have been run intermittently, and a surface tram 10,000 feet long has been built from the beach to the mill. An aerial tram has been constructed from the mill to the mine. Rooming houses are provided by the company. There were 50 employees for five months of the year. The mine was idle at the time of my visit, November 18, 1911, when surface work was just being completed for the summer.

SEWARD BONANZA MINE.

The Seward Bonanza, a lode gold mine, is owned by the Seward Bonanza Gold Mining Co., which has driven two drifts on a 5-foot vein of quartz. The property is situated 1 mile east of Mile 20 on the Alaska Northern Railroad from Seward. The company employs six men.

The development work in the drift was inspected on December 13, 1911.

CLIFF MINE.

A high-grade vein of gold-bearing quartz has been opened at the Cliff mine, 12 miles from Valdez, by the Cliff Mining Co., which is working the property under lease from the original locators. Four levels have been opened by two drifts on the vein and a 275-foot winze, the upper two levels being connected for ventilation. Overhand stopes are put up in the hanging wall and the vein stripped, the ore going to a 3-stamp mill near the entrance of the mine. Twenty-seven men are employed.

The underground workings were inspected on December 29, 1911.

FIDALGO-ALASKA MINE.

The Fidalgo-Alaska copper mine of the Fidalgo-Alaska Copper Co. is situated about three-quarters of a mile from the shore of Fidalgo Bay, an inlet on Prince William Sound. The ore is sent from the mine to the bunkers on the wharf over an aerial tram. Two drifts have been driven into the mineralized zone, where the ore, which is a chalcopyrite, is found in lenses. Bunk houses and mess houses are provided by the company for 20 men.

The lower drift, where ore was being stoped, was inspected on December 30, 1911.

ELLAMAR MINE.

The Ellamar mine of the Ellamar Mining Co. is a copper mine situated at Ellamar, Prince William Sound. The ore occurs in a mineralized slate zone and has been opened to a depth of 675 feet by seven levels. The mine has been opened to the water's edge and a cofferdam built around the water side to prevent the mine from being

flooded at high tide. The ore has been stoped through to the surface, this open cut being the only part of the mine in operation at the time of my visit, as the lower level had been allowed to fill with water. The ore is loaded directly at the wharf and shipped to the smelters for treatment. Living accommodations are provided by the company for 25 employees.

The underground workings were inspected on December 30, 1911.

LA TOUCHE MINE.

The La Touche mine, on La Touche Island in Prince William Sound, is owned by the Beatson Copper Co. The orebody is a large lens, the limits of which have not yet been determined. It is opened by one level, from which stopes have been put up and raises to the surface, where the ore is mined in an open cut. The ore is hand sorted and shipped to the smelters for treatment, the principal mineral of value being chalcopyrite. Rooming, mess, and change houses are provided by the company, as well as a hospital and physician. Powder is thawed and distributed by a powder boss. Seventy men are employed in and about the mine.

The underground workings and the open cut were inspected on December 31, 1911.

FAIRBANKS DISTRICT.

During the winter of 1911-12 the inspector visited the Fairbanks district and inspected 66 mines as listed in Table 1.

Reference to this table, in which some details of the placer mines of the Fairbanks district are given, will show that the gravel beds are comparatively deep, ranging from 30 to a little over 200 feet. In nearly all cases the gravel is frozen solid from the surface to bed rock, and practically all of the mining work requires the use of steam for thawing the ground before it is taken out of the shaft. Drifts are opened by the use of steam points and after they are driven to the end of the deposit, or to the boundary line, the gravel is mined retreating.

The mining work is usually done during the winter when the surface is frozen, and there is little chance for the shaft wall to thaw by reason of the entrance of surface water. Whenever surface water enters it thaws and loosens the frozen gravel so that it sloughs badly; then unless the timbering is very strong and extends entirely to the bottom of the shaft it is almost impossible to keep the shaft open for working purposes.

The gold-bearing gravel taken out during the winter is deposited on the surface and is washed during the summer.

TABULATIONS SHOWING DETAILS OF INSPECTIONS.

Reference to Table 1 will indicate that of the 66 mines listed only 21 have two or more openings to the surface, whereas the other 45 have only one opening. Of the 66 mines, the majority of which are opened by shafts, only 20 are equipped with ladders by which the men might escape in case of an accident to the hoisting apparatus. Because these mines have so few openings to the surface, ventilation is not as good as it should be, only 18 being classified as "good,"

whereas the remainder are rated as "poor" or "fair." In many cases the inspector has recommended that additional shafts be sunk either for ventilation or as a second exit.

Table 2 gives additional information concerning the equipment of a number of the mines in the Fairbanks district, also the size of the claims, and the number of square feet of bedrock cleaned during the season. The methods of lighting and tramping and the number of steam points in use are also given in this table.

MAGNITUDE OF THE MINING INDUSTRY IN ALASKA.

Tables 3 to 9, presented on pages 22 to 24, are abstracted from Bulletin 520 of the United States Geological Survey. They are incorporated in this report in order to call attention to the magnitude of the mining industry in Alaska.

TABLE 1.—Mines inspected in the Fairbanks and Valdez districts.

FAIRBANKS DISTRICT.

Name of locality and mine.	Deposit mined (for gold).	Shaft.			Drifts.		Number of openings to surface.	Ladders to surface.	System of mining.	Daily production, tons (t.) or buckets (b.).	Ore treatment.	Safety devices on cage or bucket.	Ventilation.	Explosives.		Living accommodations.	Bathing facilities.	Length of shift.	Employees.			Accidents.	
		Size, feet.	Depth, feet.	Timbered.	Size, feet.	Timbered.								Where thawed.	How thawed.				Underground.	Surface.	Total.	Killed.	Injured.
Bedrock Creek: Rhodes-Hall	Quartz	4 by 8	40	Yes	3 by 6	Yes	4	Yes	Overhand stoping.	18 t.	Milling		Good	Outside	Warm water.	Bunk house.	Washtub.	8	10	4	14		1
Chatanika Creek: Discovery	Frozen gravel	7 by 7	130	Yes	6 by 6½	Yes	1	No	Thawing		Sluicing	Yes	Fair		Warm water.	do.	None	10	13	3	16		
Hazard (opposite Discovery)	do.	7 by 7	147	Yes	6½ by 4	Yes	2	Yes	do.	190 b.	do.	Yes	Good		Warm water.	do.	do.	10	17	4	21		
Treasure (opposite No. 1, below bench)	do.	6 by 6	77	Yes	5 by 6	Yes	2	No	do.	200 b.	do.	No	Good			do.	do.	10	15	3	18		1
Hope	do.	6½ by 6½	80	Yes	6 by 8	Yes	2	Yes	do.	200 b.	do.	Yes	Fair			do.	do.	10	11	4	15		
Fay No. 2	Quartz				5 by 7	Part.	1	No	Development work.				Fair	In drift	Warm water.	do.	Washtub.	10			4		
Cleary Creek: 10 Below	Frozen gravel	6½ by 6½	53	Yes	6½ by 9	Yes	2	Yes	Thawing	200 b.	Sluicing	Yes	Good			do.	None	10	16	3	19		
13 Below	do.	5½ by 5½	80	Yes	4 by 6	No	1	No	do.	175 b.	do.	Yes	Good			do.	do.	10	10	3	13		
14 Below, 1st tier	do.		110	Yes	5 by 7	Yes	3	One	do.	420 b.	do.	No	Good		Can in warm water.	do.	do.	10	38	7	45		
14 Below, 2d tier	do.	7 by 7	126	Yes	4 by 5½	Part.	1	No	do.	220 b.	do.	Yes	Fair			do.	do.	10	14	3	17		
15 Below	do.	8 by 8	107	Yes	6 by 6½	Part.	1	Yes	Development work.			Yes	Fair			do.	do.	10	14	3	17		
North Star Fraction	do.	6½ by 6½	100	Yes	5 by 6½	Part.	1	Yes	Thawing	200 b.	do.	No	Fair			do.	do.	10	19	4	23		
15 Below (D. & R.)	do.	8 by 8	108	Yes	7 by 7	Yes	1	No	do.		do.	No	Fair		Warm water.	do.	Washtub.	10	25	4	29		
North Star Fraction	do.	6 by 6	115	Yes	6 by 6	Part.	1	Yes	do.		do.	Yes	Fair			do.	None	10	15	3	18		
16 Below (S. L.)	do.	6½ by 6½	160	Yes	7 by 7	Yes	2	No	do.	170 b.	do.	No	Good			do.	do.	10	16	3	19		
16 Below (E. & Co.)	do.	6½ by 6½	90	Yes	5 by 6	Part.	2	No	do.	300 b.	do.	Yes	Good	Boiler room	Warm air	do.	do.	10	27	3	30		
16 Below (S. R. W.)	do.	6½ by 6½																					
Dome Creek: Niggerhead	do.	7 by 7	186	Yes	6½ by 6½	Yes	3	No	do.	540 b.	do.	Yes	Good			do.	do.	10	44	6	50		
Niggerhead Association (S. & F.)	do.	7 by 7	185	Yes	6½ by 6½	Yes	3	No	do.	450 b.	do.	Yes	Good	Boiler room	In old boiler	do.	do.	10	48	7	55		
Niggerhead Association (W. G. F.)	do.	7 by 7	186	Yes	5½ by 6	Yes	1	No	do.	5½ by 6	do.	No	Fair			do.	do.	10	20	6	26		
Recorder	do.	6½ by 6½	183	Yes	6 by 7	Yes	1	No	do.		do.	Yes	Fair		Warm water.	do.	do.	10	8	4	12		
4 Above (J. J. B.)	do.	7½ by 7½	100	Yes	6 by 7	Yes	3	No	do.	270 b.	do.	Yes	Good			do.	Washtub.	10	18	4	22		
4 Above, 1st tier (C. & Co.)	do.	6 by 6	100	Yes	5 by 7	Yes	1	No	do.	220 b.	do.	Yes	Fair			do.	None	10	15	3	18		
4 Above, 1st tier (C. & Z.)	do.	7 by 7	104	Yes	6 by 6	Yes	3	No	do.	200 b.	do.	Yes	Good			do.	do.	10	12	4	16		
2 Below	do.	7 by 7	180	Part.	1	No	do.	do.	do.	do.	do.	No	Poor			do.	do.	10	4	1	5		1
6 Below, 3d tier	do.	6 by 6	204	Yes	5 by 7	Part.	1	No	do.	do.	do.	Yes	Fair			do.	do.	10	6	2	8		
19 Below	do.	6½ by 6½	178	Yes	5 by 7	Part.	1	No	do.	do.	do.	No	Fair			do.	do.	10	26	4	30		4 13
Eldorado: Newsboy	Quartz	5 by 7½	340	Yes	3½ by 6½	Part.	1	Yes	Overhand stoping.	16 t.	Milling	No	Fair	In drift	By candles.	do.	Washtub.	10	7	3	10		1
Idaho Claim	Frozen gravel	7 by 7	175	Yes	6 by 6	Yes	1	No	Thawing	175 b.	Sluicing	Yes	Fair			do.	None	10	20	5	25		
Ester Creek: Discovery	do.	7 by 7	60	Part.	6½ by 7	Yes	1	Yes	do.		do.	No	Fair			Cabins	None	10	3	1	4		
Discovery Bench	do.	6½ by 6½	90	Yes	6 by 7	Part.	1	No	do.		do.	No	Fair			Bunk house	do.	10	6	2	8		
1 Above	do.	7 by 7	50	Part.	5 by 7	Yes	1	Yes	do.		do.	No	Poor			do.	do.	10	12	4	16		1
2d tier bench, 2 Above	do.	6½ by 6½	51	Yes	6 by 7	Yes	1	No	do.		do.	No	Good			do.	do.	10	30	7	37		
Fraction between Discovery and 1 Below	do.	6½ by 6½	96		6½ by 6½		1	No	do.		do.	Yes	Fair			do.	do.	10	10	3	13		
3 Below	do.	7 by 7	90	Yes	8 by 8	Yes	2	No	do.		do.	Yes	Good	In magazine	Warm air	do.	do.	10	45	7	52		1
4 Below (E. Bros.)	do.	6½ by 6½	95	Yes	5 by 7	Part.	1	No	do.		do.	Yes	Fair			do.	Wash room	10	25	5	30		
4 Below (L. & C.)	do.		(c)				1	No	do.		do.	Yes	Fair			do.	do.	10	3	1	4		
Pyne Bench	do.	7 by 7	110	Yes	7 by 7	Yes	1	No	Thawing		do.	Yes	Fair			Bunk house	None	10	8	4	12		
8-A Below	do.	7 by 7	109	Yes	6½ by 7	Yes	1	No	do.		do.	Good	Good			do.	do.	10	30	5	35		
Eva Creek: Happy Home Association (W. & W.)	Gravel	7 by 7	102	Yes	5 by 7½	Yes	1	Yes	Drifting	150 b.	do.	No	Fair			do.	do.	8	26	6	32		
Daly Bench (S. & Co.)	do.	8 by 8	103	No	8 by 8	Yes	1	No	do.		do.	No	Poor			do.	do.	10	24	4	28		
Happy Home Association (H. Co.)	do.	8 by 8	104	Part.	8 by 8	Yes	1	No	do.		do.	No	Poor			do.	do.	8	45	5	50		1
Daly Bench (H. C. H.)	do.		(c)				1	No	do.		do.	Yes	Fair			do.	do.	10	9	4	13		
Fairbanks Creek: 2 Above	Frozen gravel	6 by 6	19	Yes	5 by 7	Yes	1	Yes	Thawing		do.	No	Fair			do.	do.	10	5	2	7		
Pennsylvania	Quartz	4 by 7	75	No	4 by 6	No	1	Yes	Stoping		Milling	No	Poor			do.	do.	10	2	1	3		
8 Below	Frozen gravel	6 by 6		Part.	5 by 7	Part.	1	No	Thawing		Sluicing	No	Fair			do.	do.	10	4	1	5		
9 Below (P. & E.)	do.	6 by 6	90	Part.	5 by 7	Part.	1	No	do.		do.	No	Fair			do.	do.	10	4	1	5		
9 Below (Magnuson)	do.	6 by 6	92	Part.	5 by 7	Part.	1	Yes	do.		do.	No	Fair			do.	do.	10	8	2	10		
9 Below (G. & C.)	do.	6 by 6	90	Part.	5 by 7	Part.	1	No	do.		do.	No	Fair			do.	do.	10	6	1	7		
9 Below (M. & G.)	do.	6 by 6	90	Part.	5 by 7	Part.	1	Yes	do.		do.	Yes	Good			do.	do.	10	17	4	21		
10 Below (F. & L.)	do.	7 by 7	100	Yes	6 by 6	Yes	1	No	do.		do.	Yes	Fair			do.	do.	10	11	4	15		
10 Below (A. B. & Co.)	do.	6 by 6	92	Part.	4 by 6	Yes	1	Yes	do.		do.	No	Fair			do.	do.	10	7	1	8		
Gold Stream: Twin Association	Gravel not frozen	7 by 7	50	Yes	6 by 8	Yes	1	Yes	Drifting		do.	Yes	Fair			do.	do.	10	22	4	26		
2 Below	Frozen gravel	6½ by 6½	25	Yes	5 by 7	Part.	1	Yes	Thawing		do.	No	Fair			do.	do.	10	9	3	12		
8 Below, 2d tier	do.	7 by 7	90	Yes	7 by 7	Yes	2	No	do.		do.	No	Poor			do.	do.	10	35	10	45		
9 Below, 2d tier	do.	6½ by 6½	110	No	5 by 7	No	1	No	do.		do.	No	Fair			do.	do.	10	4	1	5		
15 Below	do.	6½ by 6½	100	Yes	5 by 6½	Yes	2	No	do.		do.	No	Fair			do.	do.	10	17	3	20		
17 Below	do.	6 by 6	70	Yes	7 by 6	Yes	2	No	do.		do.	No	Fair			do.	do.	10	13	3	16		
Vault Creek: Alabama & Homestake	do.	6 by 6	158	Yes	5 by 7	Yes	1	No	do.	150 b.	do.	Yes	Poor			do.	do.	10	12	3	15		
Alabama	do.	7 by 7	175	Yes	5 by 7	Yes	2	No	do.	325 b.	do.	Yes	Fair			do.	do.	10	33	7	40		
Willow Creek: Tolovana	Quartz	4 by 7	50	Part.	5 by 7	Part.	1	Yes	Stoping		Milling	Yes	Fair	In drift	By candles.	do.	Washtub.	10	4	0	4		1

VALDEZ DISTRICT.

Princes William Sound: Cliff	Quartz	2-comp.	275	Yes	5 by 7	No	2	Yes	Stoping	25 t.	Milling		Fair	Outside		Bunk house.			15	12	27		
Three Man (Keystone)	Copper				5 by 7				do.		Smelting		Good			do.	None		20		20		
Fidalgo-Alaska	do.						2		do.		do.		Fair			do.	do.		15	10	25		
Ellamar	do.		675				2		do.		do.		Good			Cabins	do.		35	35	70		1
Beatson	do.				5 by 7	Yes	2		Open cut.		do.		Good	In magazine	Warm air	Bunk house.	Yes		9				
Resurrection Bay: Seward Bonanza	Quartz				4 by 6½	No	1		Dev. work.				Fair			do.	None		8	4	2	6	

a Imprisoned 90 hours; not injured.

b Ventilation by blower.

c Sinking.

TABLE 3.—*Mineral production of Alaska, 1910-11.^a*

	1910		1911	
	Quantity.	Value.	Quantity.	Value.
Gold.....	780,131	\$16,126,749	^b 815,276	\$16,853,256
Silver.....	157,850	85,239	^b 460,231	243,923
Copper.....	4,241,689	538,695	27,267,871	3,366,584
Coal.....	1,000	15,000	900	9,300
Marble, gypsum, tin, lead, etc.....		121,561		176,942
		16,887,244		20,650,005

^a U. S. Geol. Survey Bull. 520, p. 18.^b Preliminary estimates.

NOTE.—In the above table copper is valued at 12.7 cents a pound for 1910 and 12.35 cents for 1911; silver at 54 cents an ounce for 1910 and 53 cents for 1911.

TABLE 4.—*Sources of gold, silver, and copper in Alaska, 1911, by kinds of ores.^a*

	Tonnage.	Gold.		Silver.		Copper.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		Ounces.		Ounces.		Pounds.	
Silicious ores.....	1,594,404	204,465.99	\$4,226,687	29,829	\$15,810		
Copper ores.....	68,975	4,187.78	86,569	320,114	169,660	27,267,871	\$3,366,584
Placers.....		606,622.50	12,540,000	110,288	58,453		
	1,663,379	815,276.27	16,853,256	460,231	243,923	27,267,871	3,366,584

^a U. S. Geol. Survey Bull. 520, p. 20.TABLE 5.—*Production of gold, silver, and copper in Alaska, 1901-1911.^a*

Year.	Gold.		Silver.		Copper.	
	Quantity.	Value.	Quantity.	Commercial value.	Quantity.	Value.
	Fine ounces.		Fine ounces.		Pounds.	
1901.....	335,369	\$6,932,700	47,900	\$28,598	250,000	\$40,000
1902.....	400,709	8,283,400	92,000	48,590	360,000	41,400
1903.....	420,069	8,683,600	143,600	77,843	1,200,000	156,000
1904.....	443,115	9,160,000	198,700	114,934	2,043,586	275,676
1905.....	756,101	15,630,000	132,174	80,165	4,805,236	749,617
1906.....	1,066,030	22,036,794	203,500	136,345	5,871,811	1,133,260
1907.....	936,043	19,349,743	149,784	98,857	6,308,786	1,261,757
1908.....	933,290	19,292,818	135,672	74,906	4,555,362	605,267
1909.....	987,417	20,411,716	147,950	76,934	4,124,705	536,211
1910.....	780,131	16,126,749	157,850	85,239	4,241,689	538,695
1911.....	815,276	16,853,256	460,231	243,923	27,267,871	3,366,584
	7,873,550	162,760,776	1,869,361	1,063,334	61,059,046	8,704,467

^a U. S. Geol. Survey Bull. 520, p. 21.TABLE 6.—*Value of gold production of Alaska, with approximate distribution by regions, 1905-1911.^a*

Year.	Pacific coast belt.	Copper River and Cook Inlet region.	Yukon Basin.	Seward Peninsula and north-western Alaska.	Total.
1905.....	\$3,430,000	\$500,000	\$6,900,000	\$4,800,000	\$15,630,000
1906.....	3,454,794	332,000	10,750,000	7,500,000	22,036,794
1907.....	2,891,743	275,000	9,183,000	7,000,000	19,349,743
1908.....	3,448,318	401,500	10,323,000	5,120,000	19,292,818
1909.....	4,264,716	265,000	11,580,000	4,302,000	20,411,716
1910.....	4,182,730	351,630	8,062,389	3,530,000	16,126,749
1911.....	4,265,573	313,538	9,139,145	3,135,000	16,853,256
	25,937,874	2,438,668	65,865,534	35,337,000	129,701,076

^a U. S. Geol. Survey Bull. 520, p. 22.TABLE 7.—*Estimated total amount of gravel sluiced in Alaska placer mines and value of gold recovered per cubic yard, 1908-1911.^a*

Year.	Total quantity of gravel.	Value of gold recovered per cubic yard.
	Cubic yards.	
1908.....	4,275,000	\$3.74
1909.....	4,418,000	3.66
1910.....	3,800,000	3.20
1911.....	5,790,000	2.17

^a U. S. Geol. Survey Bull. 520, p. 35.TABLE 8.—*Coal consumption of Alaska, by sources, 1899-1911, in short tons.^a*

Year.	Coal imported from States, chiefly from Washington.		Coal produced in Alaska, chiefly subbituminous and lignite. ^b	Total domestic consumption. ^c	Total consumption of foreign coal, chiefly bituminous from British Columbia. ^c	Total coal consumed in or imported into Alaska.
	Bituminous.	Anthracite.				
1899.....	^d 10,000		1,200	11,200	50,120	61,320
1900.....	15,048		1,200	16,248	56,623	72,871
1901.....	^d 24,000		1,300	25,300	77,674	102,974
1902.....	^d 40,000		2,212	42,212	68,363	110,575
1903.....	64,625		1,447	66,073	60,605	126,678
1904.....	36,689		6	38,383	76,815	115,198
1905.....	67,707		6	71,487	72,567	144,054
1906.....	68,960	533	5,541	75,034	47,590	122,624
1907.....	45,130	1,116	56,385	10,139	88,596	144,981
1908.....	23,402	491	3,107	27,000	72,831	99,831
1909.....	33,112		2,800	35,912	74,316	110,228
1910.....	32,138		1,000	33,138	73,904	107,042
1911.....	32,255		900	33,155	88,573	121,728
	492,066	2,147	36,314	531,527	908,577	1,440,104

^a U. S. Geol. Survey Bull. 520, p. 43.^b Calendar year.^c Fiscal year ending June 30.^d Estimated.

TABLE 9.—*Shipments of petroleum products (not including lubricating oils) to Alaska from other parts of the United States, 1905-1911, in gallons.^a*

Year.	Crude oil.		Naphtha.		Illuminating oil.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
1905.....	2,715,386	\$91,068	713,496	\$109,921	627,391	\$113,921
1906.....	2,688,100	38,409	589,978	100,694	568,033	109,964
1907.....	9,104,300	143,506	636,881	119,345	510,145	99,342
1908.....	11,891,375	176,483	939,424	147,104	566,598	102,567
1909.....	14,034,900	334,258	746,930	118,810	531,727	98,786
1910.....	18,835,670	477,673	788,154	136,569	626,972	95,483
1911.....	18,142,364	406,400	1,238,865	167,915	423,750	57,896

^a U. S. Geol. Survey Bull. 520, p. 44.

Very respectfully,

SUMNER S. SMITH,
Mine Inspector for Alaska.

The SECRETARY OF THE INTERIOR.

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