REPORT

OF THE

MINE INSPECTOR FOR THE TERRITORY OF ALASKA

TO THE

SECRETARY OF THE INTERIOR

FOR THE FISCAL YEAR
ENDED JUNE 30
1914

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REPORT OF THE MINE INSPECTOR FOR THE TERRITORY OF ALASKA.

SIR: During the fiscal year ended June 30, 1914, the mineral output of Alaska showed a slight decrease. The decrease was caused largely by the extremely dry summer in the northern part of the Territory and by the exhaustion of many of the bonanzas of the placer fields. Although the dry summer caused losses to many operators, it was not altogether without benefit, as it gave prospectors an opportunity to sink prospect shafts in stream beds that had not been dry enough during previous summers.

Three new placer fields, the Chisana, the Nelchina, and the Andreafski, were discovered and caused some stampeding. The most popular route to the Chisana, a branch of the upper Tanana, was through Cordova, although it may be also reached through Fairbanks, Dawson, or Skagway. The Nelchina field is a branch of the Copper River and is reached from Knik by way of the Matanuska River and across the divide. The Andreafski field is accessible from a station of the Northern Navigation Co. of the same name on the Yukon River.

There was increased activity in the development of lodes in the southern districts of the Territory, particularly in the vicinity of Juneau, where new gold-mining operations were started on a large scale. There was also increased activity in copper mining. Approximately 4,500 men were employed in all lode mines.

Although the production of coal was almost negligible, it is felt that some advance was made. The patenting of several claims and other activities indicate that coal mining has at least made a start.

WORK OF THE INSPECTOR'S OFFICE.

SITUATION OF HEADQUARTERS.

The headquarters of the Federal mine inspector are in the courthouse at Juneau, in a room occupied through the courtesy of the Department of Justice. It is hoped that work will be started in the near future on the new Federal building, to be built in this city, where adequate quarters can be provided for the needs of the office.

INSPECTION WORK.

The inspection of mines of the Territory, as provided for under the Federal Government, is in charge of a mine inspector. In previous years it has been impossible for this inspector to cover adequately the whole Territory. By the provision of the Territorial act ap-

proved April 30, 1913, William Maloney, of Nome, was appointed Territorial mine inspector and assigned to the detail work of the second and fourth judicial divisions of the Territory, under the general supervision of the Federal mine inspector. This appointment became effective August 1, 1914, and provided for headquarters at Nome for a period of two years.

NEEDS OF THE OFFICE.

The office of the inspector lacks clerical help. Although the Federal and Territorial inspectors can doubtless cover the principal mining districts once yearly, there is urgent need for other field assistants to cover districts not easily accessible by the main traveled waterways. There being no one at headquarters while the inspector is absent on inspection trips, it often happens that telegrams and urgent mail, such as inquiries regarding accidents, requests for bulletins or information, must remain unanswered, sometimes for a period of several months, until the return of the inspector from his field work.

ACTIVITIES OF THE FEDERAL INSPECTOR DURING THE FISCAL YEAR.

The gold-dredging industry of the Seward Peninsula was investigated in detail and a study was made of the various safeguards required on the boats, such as coverings for gears, countersinking of dangerous set screws, and the placing of railings around moving belts and line shafts. The districts tributary to Fairbanks, Ruby, Iditarod, Nome, Knik, Seward, Valdez, Cordova, Juneau, Ketchikan, and Chisana were visited. Lack of time prevented stops in the Koyukuk, Inoko, Kuskokwim, Nelchina, Susitna, Wrangell, and many smaller districts.

During the month of July, 1913, inspection work was done in the vicinity of the following places: Hope, Sunrise, Seward, Valdez, Golden, and the Port Wells district. Twelve properties were inspected during the month. The early part of August was spent in and about Juneau, after which a trip was made to Nome by way of Victoria, British Columbia, and Seattle, Wash. The early part of September was spent in and about Nome, conferring with mine officials, collecting accident statistics, investigating accidents, and inspecting mines. During the latter half of the month inspection work was carried on in the vicinity of Council, East Fork, Ruby Creek, Shovel Creek, Dickson, Orofino, and Nome. Most of these inspections had to do with dredging.

The early part of October was spent in Nome in the pursuance of various official duties. A trip was made to Seattle, where conferences were held in the latter part of the month with the Director of the Bureau of Mines and other persons. The first two weeks of November were spent in the vicinity of Ketchikan and Sulzer; here six mines were inspected and several conferences held with operators. The remainder of the month was spent in headquarters at Juneau. The month of December was spent chiefly at headquarters, although several trips were made to near-by points for the purpose of investigating accidents.

The months of January and February, 1914, were spent at Juneau and Treadwell. At Treadwell several mines were inspected with relation to the methods of handling powder. In addition to office work at Juneau, several mines were inspected in the vicinity.

During March visits were made to Cordova, Shushana Junction, Chisana, and creeks tributary thereto. A conference was held with the United States commissioner regarding the district and many of the claims were visited. The month of April was spent in visiting claims on the creeks in the vicinity of Fairbanks, Tofty, Fox, and Olnes.

During May and June visits were made to Cleary, Esther, Fairbanks, Summit Road House, Chatanika, Olnes, Ruby, Long, Iditarod, Holy Cross, St. Michael, Nome, and Seattle. Twelve properties and several dredges were inspected and several conferences were held with operators.

Dr. J. A. Holmes, Director of the Bureau of Mines, was in Nome when Mr. Maloney was appointed Territorial mine inspector. Mr. Maloney returned with the director to Fairbanks and made a trip to the Nenana coal field. Later, at the request of the director, Mr. Maloney was sent by Gov. Strong to the Pittsburgh (Pa.) station of the Bureau of Mines that he might study the methods used by the bureau to prevent accidents and in training men in first-aid and mine rescue work.

While on this trip Mr. Maloney was named as delegate from Alaska to the American Mining Congress and attended the Philadelphia meeting of that organization. He then returned to Juneau for conference with the Federal mine inspector and Gov. Strong, and later took up the detail of his work in the second and fourth judicial divisions. The assistance rendered by Mr. Maloney made possible a much more thorough inspection of mines during the year.

DECLINE IN PRODUCTION OF METALS.

As indicated by the figures of the United States Geological Survey for the calendar year 1913, the gold output decreased slightly during the fiscal year, the estimated gold output during the calendar year being $15,626,813, as compared with $17,145,951 in 1912. Copper production decreased more during the same period, the output for the calendar year 1913 being estimated at 21,660,000 pounds as compared with 29,230,491 pounds in 1912. Silver, being largely a by-product of gold and copper mining, also showed a decrease from $316,839 in 1912 to about $219,000 in 1913. Other minerals, including gypsum, tin, marble, lead, and petroleum, were produced in 1913 to the estimated value of $220,000, which was approximately the same as the value assigned for 1912.

Figures showing details of the production of gold, silver, and copper in Alaska follow:

Production of gold, silver, and copper in Alaska, 1890–1913.[a]

Year.	Gold.		Silver.		Copper.	
	Quantity.	Value.	Quantity.	Commercial value.	Quantity.	Value.
	Fine ounces.		*Fine ounces.*		*Pounds.*	
1890	36,862	$762,000	7,500	$6,071		
1891	43,538	900,000	8,000	7,920		
1892	52,245	1,080,000	8,000	7,000		
1893	50,213	1,038,000	8,400	6,570		
1894	62,017	1,282,000	22,261	14,257		
1895	112,642	2,328,500	67,200	44,222		
1896	138,401	2,861,000	145,300	99,087		
1897	118,011	2,439,500	116,400	70,741		
1898	121,760	2,517,000	92,400	54,575		
1899	270,997	5,602,000	140,100	84,276		
1900	395,030	8,166,000	73,300	45,494		
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	22,030,794	203,500	136,345	5,871,811	1,133,260
1907	936,041	19,349,743	149,784	98,857	6,308,786	1,261,757
1908	933,290	19,292,818	135,672	71,906	4,585,362	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	243,922	27,267,878	3,408,485
1912	829,435	17,145,951	515,186	316,839	29,230,491	4,823,031
1913	755,947	15,626,813	362,563	218,988	21,659,958	3,357,293

[a] Brooks, A. H., Gold, silver, and copper in Alaska in 1913: Mineral Resources U. S., 1913, U. S. Geol. Survey, p. 215.

Value of production of gold in Alaska, 1912 and 1913, by regions.[a]

Region.	1912	1913	Increase +, decrease —.
Pacific coast belt, including southeastern Alaska and Prince William Sound	$4,904,753	$4,529,529	— $375,224
Copper River and Cook Inlet region	358,401	378,643	+ 20,242
Yukon and Kuskokwim basins	8,857,797	8,183,641	— 674,156
Seward Peninsula and northwestern Alaska	3,025,000	2,535,000	— 490,000
Total	17,145,951	15,626,813	—1,519,138

[a] Brooks, A. H., Gold, silver, and copper in Alaska in 1913: Mineral Resources U. S., 1913, U. S. Geol. Survey, p. 215.

Sources of gold, silver, and copper in Alaska, 1913, by kinds of ore.[a]

Source.	Quantity of ore.	Gold.		Silver.		Copper.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Short tons.	*Fine ounces.*		*Fine ounces.*		*Pounds.*	
Siliceous ores	1,614,506	232,916.58	$4,814,813	30,897	$18,662		
Copper ores	135,756	6,385.50	132,000	273,179	165,000	21,659,958	$3,357,293
Placers		516,645.00	10,680,000	58,487	35,326		
Total	1,750,262	755,947.08	15,626,813	362,563	218,988	21,659,958	3,357,293

[a] Brooks, A. H., Gold, silver, and copper in Alaska in 1913: Mineral Resources U. S., 1913, U. S. Geol. Survey, p. 216.

LODE MINING.

The decline in some of the older placer camps had a tendency to increase the activity in lode mining, as shown by gold and copper mining operations in southeastern and southwestern Alaska. Near Juneau the extensive work of two additional mining companies, on the large low-grade gold deposits, has done much to increase the prominence of the district as one of the important gold-mining districts of the world. The operators of these mines are making records in the matter of low costs. There is a possibility of a third mining operation being started there.

The largest copper producer of the Territory, the Kennecott Bonanza, was busy and there was notable activity in copper mining in other districts. The Granby Copper Co. completed the construction of a smelter on Hidden Inlet, on the Portland Canal, and acquired two copper mines in widely separated districts. Attempts were made to work some of the lode claims in the interior of the Territory, but on account of high costs only a few were able to continue. A great deal of prospecting was done on the lode tin deposits of the Buck Creek district, north of Nome.

GREATER USE OF DREDGES.

As the bonanza parts of the placer fields are becoming exhausted, more attention is being given to the winning of gold from auriferous gravels by means of dredges. Over 40 boats have begun operation on the Seward Peninsula and in the Iditarod district. The tin dredge on Buck Creek, north of Nome, continued a steady producer during the year. Some placer tin was saved in the Manley Hot Springs district; this will be shipped during the fall.

COAL MINING.

Coal mining has not received much attention. Two groups of claims were patented and operations were begun on them. About 1,600 tons of lignitic coal was shipped from the Whorf property near Seldovia, on Cook Inlet. Much of the coal brought $4 per ton f. o. b. the mine, although some was delivered at Seward at that figure.

An expedition, organized by the Bureau of Mines for the Navy Department, went into the Matanuska district, in the vicinity of Chickaloon River, and sent out about 800 tons of coal to be subjected to steaming tests on a vessel of the United States Navy. Considerable prospecting was done by this expedition in the Matanuska district, and coking tests made of some of the coal obtained were encouraging. A small quantity of lignite was mined near Candle and Wainwright for local use, and patents were issued on claims in the Cook Inlet field and on Admiralty Island.

RAILROADS.

The development of the mineral resources of Alaska depends largely on the building of railroads to carry in supplies and to carry out the products of the mines and smelters. In the year 1913 the

taxation on railway operation, $100 per mile on operating lines, and the high cost of fuel, presented almost insurmountable obstacles to profitable operation of the present inadequate lines. There is less than 500 miles of railroad in the Territory, and probably only a little more than one-half of the trackage was operated during the year. Although the building of the present railroad, in conjunction with the establishment of wagon roads and steamboat service, has been of the greatest value to the mining industry of the Territory, further progress in this direction is sadly needed, especially with respect to transportation facilities for various remote but promising districts.

On March 12, 1914, an act was approved authorizing the President to construct 1,000 miles of railroad in Alaska. This work, when completed, will doubtless result in untold good to the mining and other industries of the Territory.

LABOR CONDITIONS.

During the year there was an oversupply of labor in all but the most remote parts of the Territory. This condition was due in part to the prominence given to Alaskan affairs by the press of the States, which led people to believe that there was work in abundance. Consequently, many men rushed in without adequate means of support. At a few places temporary shortages were caused by stampedes to the new placer fields.

An eight-hour bill for metalliferous lode mines was passed by the Territorial legislature. In the placer and nonmetal mines the 10-hour shift was still effective. On the dredges all labor was paid by the hour, 10-hour and 12-hour shifts being customary. There were no strikes or lockouts in the mines of the Territory. At practically all of the mines bunk and mess houses for the employees are provided by the operators, but at the majority of the mines great improvement can be effected by adding change rooms and improving the living facilities and bathing accommodations.

ACCIDENTS.

Owing to the fact that complete returns are not available for the fiscal year ended June 30, 1914, figures are submitted for the calendar year 1913.

During 1913 there were 25 fatal accidents in and about the mines. As there were about 8,000 miners employed in the Territory, the approximate death rate was 3.125 per 1,000 men employed. This rate, however, does not accurately represent the actual rate, for, considered as a whole, the placer mines do not operate more than six months in the year, or the dredges more than four months.

There were approximately 4,500 men employed in the lode mines, 3,200 in the placers, and 300 on the dredges. There were 15 men killed in the lode mines, 7 in the placers, and 3 on the dredges.

Of the 25 fatalities 11 were due to falls of rock or gravel, 7 to powder explosions or fumes from burning powder, and 1 from a fall from staging in a shaft, 1 man was caught between timbers and a cage, 3 were injured about machinery, 1 fell into a shaft containing boiling water, and 1 was caught in a snow slide.

The allied Treadwell companies and the Alaska Gastineau are the largest employers of mining labor in the Territory. At Treadwell, the Alaska Treadwell, Alaska United, and Alaska Mexican gold-mining companies operating under the same management, there were 1,700 employees. There were 7 fatal accidents, giving a fatality rate of 4.12 per 1,000 men employed. The employees of the Alaska Gastineau Mining Co., at Juneau, totaled 900. There were 7 fatal accidents, giving a rate of 7.78 per 1,000 men employed.

LIST OF FATAL ACCIDENTS.

As mentioned above, returns for the fiscal year are not complete. Following is a list of fatal accidents that occurred during the first half of the fiscal year, July 1 to December 31, 1913:

1. James Harrington, Irish, age 25, killed July 15, by an explosion caused by drilling into a cut-off hole in the Sheep Creek tunnel of the Alaska Gastineau Mining Co., Juneau.
2. John Steipovich Draigo, Italian, age unknown, killed July 31, by a run of gravel on the Hoffman bench claim, operated by Fallon & Mitchell, on Eva Creek, in the Fairbanks district.
3. Steven Gatti, Italian, age unknown, killed August 13, by a run of gravel on 17 Goldstream, operated by Peterson & Craig, in the Fairbanks district.
4. Harry R. Hood, American, age 23, killed August 16, by fumes from a burning powder magazine in the Perseverance mine of the Alaska Gastineau Mining Co., Juneau.
5. Steve Biama, Italian, age 29, killed August 16, by fumes from a burning powder magazine in the Perseverance mine of the Alaska Gastineau Mining Co., Juneau.
6. Mat. Samovich, Montenegrin, age 22, killed August 16, by fumes from a burning powder magazine in the Perseverance mine of the Alaska Gastineau Mining Co., Juneau.
7. Carl Knudson, Swede, age unknown, killed August 18, by fall of frozen slab in Paystreak claim, operated by Hansen & Larsen, Nome.
8. Basilio Mattenzzo, Italian, age 27, killed August 21, by fall of rock in the Treadwell mine of the Alaska Treadwell Gold Mining Co., Treadwell.
9. Aneus Samuel, Turk, age 24, killed August 21, by fall of rock in the Treadwell mine of the Alaska Treadwell Gold Mining Co., Treadwell.
10. N. M. Brown, American, age unknown, killed September 6, by falling 180 feet down the shaft at the Perseverance mine of the Alaska Gastineau Mining Co., Juneau. His fall was due to his being in a weakened condition from breathing powder fumes.
11. Bagazo Tacoef, Russian, age 40, killed September 11, by fall of rock in the Ready Bullion mine of the Alaska United Gold Mining Co., Treadwell.
12. Rudolph Swartz, American, age 17, killed September 21. He was caught on the shaft of a dredge operated by the Flume Dredge Co., on Melsing Creek in the Council district.
13. Patrick Corbett, Irish, age unknown, killed October 17, by premature explosion of a primer while blasting ground for the dredge of the Blue Goose Mining Co., on Ophir Creek in the Council district.

14. John Travis, American, age unknown, killed October 19, by a snowslide at the Gold Bullion mine in the Willow Creek district.

15. Paul Ivory, American, age unknown, killed October 20, by rock falling from the conveyor belt of the Wonder dredge of the Nome Consolidated Dredging Co., Nome.

16. Thomas Overland, nationality unknown, age unknown, killed November 22, by falling into a hole containing boiling water, in the Fairbanks district.

17. Axel Werta, Finn, age 22, killed December 9. Struck by a rock from the face of the excavation for the crusher plant of the Alaska Gastineau Mining Co., Juneau.

18. Ward Lugton, American, age 25, killed December 22, by being caught in the hoisting cable at the central hoist of the Treadwell mine of the Alaska Treadwell Gold Mining Co., Treadwell.

The present Federal law governing mine inspection, the old coal-mine inspection act that applied to New Mexico and Indian Territory and was extended to Alaska, fails utterly to fit the mining conditions existing in the Territory, and is therefore entirely inadequate.

LENGTH OF MINING SEASON.

The length of the operating season varies greatly in different parts of the Territory, as it depends on the nature of the work, transportation facilities, and climatic conditions. Throughout southeastern Alaska the larger mines are operated throughout the year, although for short periods during the winter there is a slight shortage of water for power and mill consumption. The same may be said of the entire coast as far north as the Bering Sea.

Throughout the placer fields of the interior and on the Seward Peninsula much of the richer ground is mined during the winter months and sluiced as soon as water is available in the spring. The poorer ground is mined during the summer season, from the middle of May to the middle of October, and the gravel dumped directly into the sluice boxes. In the poorer ground it is customary to sink the shafts to bedrock, to drift, and to crosscut the pay-gravel opening to obtain the maximum yardage as soon as water is available.

Lode mining throughout the interior presents no more difficulty during the winter months than in any other cold country, the problems being to supply water and to keep the plant warm. The dredges of the Seward Peninsula usually work from late in June until the latter part of October, averaging 125 days. However, some of the boats that are better equipped for heating and thawing the gravel ahead of the dredges work from late in May until some time in November, running 160 or 170 days.

COST DATA.

Alaska is a country of extremes in mining costs. The situation of a mine may make its operation decidedly reasonable or very costly. Extremely low temperatures and shortness of season naturally affect the cost sheet. Along the southeastern coast many of the mines are on or near deep-water harbors, so that cheap water transportation and comparatively cheap labor are available the year around. However,

owing to a lack of roads, costs may be amazingly high only a short distance from the coast.

In summer the excessive rainfall makes it difficult to maintain roads, and in winter, when the sledding is good, many of the smaller operators and practically all the prospectors depend on dog teams for hauling their supplies. The lack of railroads through the interior makes lode mining practically impossible, except in the districts served by water transportation. Even in the placer camps of the interior practically 50 per cent of the gross output goes to cover costs of freight. With few exceptions fuel costs are high.

The fact that much of the placer ground is frozen may add to or lessen the cost of mining, according to the depth of the ground. Where the pay gravel is shallow enough or is so situated that dredging or hydraulicking is feasible, the cost is greatly increased by frozen ground, but where the pay lies so deep that drifting must be done, frozen ground is cheaper to handle. Thawed ground requires excessive timbering.

Through southeastern Alaska miners are paid $3 to $4 per shift, the customary $1 a day being charged for board. In the interior $5 a day and board is the current wage, the average cost for board amounting to $2.25 a day. In the Nome district, $3 and board is paid during the winter season and $5 with board in summer, the actual cost of board being estimated at $1.25 a day. On the dredges an hourly schedule is in effect, the average being 50 cents an hour for laborers and from 60 to 75 cents an hour for skilled labor. Both rates include board.

Fuel costs at tidewater in southeastern Alaska, for those buying in comparatively large lots, average about $6 per ton (2,000 pounds) for coal and $1 per barrel for oil; on Prince William Sound, $9 per ton for coal and $2 per barrel for oil; at Nome, $15 per ton for coal and $2.50 a barrel for oil; at Fairbanks wood is $12 to $16 per cord delivered.

The tables following show freight rates, 2,000 pounds or 40 cubic feet being considered a ton. It is the practice to charge by weight or bulk, the choice depending on which basis will yield the greater profit to the company carrying the freight. On extra heavy pieces of machinery an excess charge is made.

The rates for shipments from Nome to tributary points are: Teller, $10 per ton; Lost River, $12.50; York, $12.50; Tin City, $15; Deering, $20; Keewalik, $20; and Kotzebue, $20. The tables of freight rates follow:

Freight rates from Seattle or Tacoma.

[Rates represent charges per ton in carload lots; ton, 2,000 pounds or 40 cubic feet.]

Destination.	General merchandise.	Coal.	Mining machinery.	High explosives.
Nome	$12.00	$11.50	$12.00	$30.00
St Michael	12.00	11.50	12.00	30.00
Solomon	12.00	11.50	12.00	30.00
Dickson	12.00	11.50	12.00	30.00
Golofuin [a]	[b] 9.00	[b] 8.00	[b] 9.00	[b] 25.00

[a] From Golofuin to Council the rate is $30 per ton on boats or barges up the Fish and Niukluk Rivers.
[b] Does not include lighterage.

Freight rates from San Francisco, Seattle, or Tacoma.

[Rates represent charges per ton; ton, 2,000 pounds or 40 cubic feet.]

Destination.	General rate.	Coal.	Mining machinery.	High explosives.
Andreafski	$30	General rate	General rate [a].	General rate plus 200 per cent.
Dikeman	50	do	do	Do.
Ruby	40	do	do	Do.
Fairbanks	50	do	do	Do.
Rampart	48	do	do	Do.
Circle	50	do	do	Do.
Eagle	50	do	do	Do.
Fortymile	50	do	do	Do.
Dawson	50	do	do	Do.
Bettles	90	do	do	Do.

[a] Extra charge for pieces weighing over 2,000 pounds.

Freight rates from Seattle or Tacoma.

[Rates represent charges per ton; ton, 2,000 pounds or 40 cubic feet.]

Destination.	General merchandise.	Coal.	Machinery.	High explosives.
Ketchikan	$3	$4	$3	[a] $10
Douglas				
Juneau				
Treadwell	[a] 4	4	3	[a] 12
Petersburg				
Wrangel				
Skagway	[a] 5	4	3	[a] 15
Sitka	8	4	3	25
Sulzer				
Cordova				
Ellamar				
Katalla [b]	11	6	11	[a] 25
LaTouche				
Seward				
Valdez				
Seldovia	13	8	13	30
Illiamna Bay	15	10	15	35
Apollo	14	8	17	37

[a] Reduction on large lots. [b] Rates for Katalla do not include lighterage.

LIST OF MINES.

In the table following is given an incomplete list of the mining operations near the coast. No attempt has been made to include all the individual placer operators, the holding companies that lease their ground, or the many companies that perform only the annual assessment work:

Incomplete list of mining operations.

SOUTHEASTERN ALASKA.

Name of company.	Situation.	Local address.	City address.	Manager or superintendent.
Alaska Gastineau Mining, operating company for the Alaska Gold Mines Co.	Silver Bow Basin, Sheep Creek.	Juneau		B. L. Thane.
Alaska Industrial	Sulzer	Sulzer		C. A. Sulzer.
Alaska Juneau Gold Mining	Silver Bow Basin	Juneau	Mills Building, San Francisco, Cal.	R. A. Kenzie.
Alaska Mexican Gold Mining	Treadwell	Treadwell	do	Do.

Incomplete list of mining operations—Continued.

SOUTHEASTERN ALASKA—Continued.

Name of company.	Situation.	Local address.	City address.	Manager or superintendent.
Alaska Treadwell Gold Mining	Treadwell	Treadwell	Mills Building, San Francisco, Cal.	R. A. Kenzie.
Alaska United Gold Mining	do	do	do	Do.
Algunican Development	Jualin	Jualin		L. K. Kennedy.
Chichagoff Mining	Klag Bay	Chichagoff		J. R. Freeburn.
Dunton mine, under bond to M. M. Reese.	Hollis	Hollis		M. M. Reese.
Eagle River Mining	Amalga	Juneau		B. L. Thane.
It Mining	Kasaan Bay	Ketchikan		
Kensington Mining	Comet	Comet		B. L. Thane.
Mt. Andrew Copper & Iron	Kasaan Bay	Ketchikan		
Pacific Coast Gypsum	Gypsum	Gypsum		Thomas George.
Princeton Mining & Milling	Dolomi	Dolomi		B. A. Eardley.
Rush & Brown	Kasaan Bay	Kasaan		U. S. Rush.
United States Smelting, Refining & Mining	Gold Creek	Juneau		

PRINCE WILLIAM SOUND DISTRICT.

Beatson Copper	LaTouche Island	LaTouche	165 Broadway, New York, N.Y.	
Cameron-Johnson Gold Mining	Near head Shoup Glacier.	Valdez		Sidney Drake.
Cliff Mining	Valdez Harbor	do		W. R. Millard.
Ellamar Mining	Ellamar	Ellamar		L. L. Middlecamp.
Fidalgo Mining	Fidalgo Bay	do		T. W. Blakney.
Gold King Mining	East arm Columbia Glacier.	Valdez		C. R. Crawford.
Landlock Bay Copper Mining	Landlock Bay	do		W. A. Rystrom.
Mineral King Mining	Bettles Bay	do		George Hermann.
Sea Coast Mining	Valdez	do		
Sealey-Davis Mining	Shoup Bay	do		C. E. Sealey, J. M. Davis.
Three Man Mining	Landlock Bay	Landlock		W. A. Dickie.

KENAI PENINSULA.

Gilpatrick mine	Moose Pass	Seward		John Gilpatrick.
Gold Stamp Mining	Bear Creek	Hope		J. O. Buzard.
Kenai Alaska Gold	Falls Creek	Seward		J. R. Hayden.
Moose Pass Mining	Moose Pass	do		M. Imhoff.
Primrose Mining	Porcupine Creek	do		A. L. Specker.
Scheen-Lechner Mining	Falls Creek	do		Samuel Silverman, E. Ayres.
Wharf, W. G	Seldovia	Seldovia		W. G. Wharf.

WILLOW CREEK (SUSITNA DRAINAGE).

Alaska Free Gold Mining	Fishook Creek	Knik	Commons Building, Seattle, Wash.	William Martin.
Alaska Gold Quartz Mining	do	do		Milo Kelly.
Gold Bullion mine	Willow Creek	do		Ronald Harris.

SEWARD PENINSULA.

American Gold Dredging	Peluk Creek	Nome		Benjamin Benard.
Arctic Gold Dredging	Hobson Creek	do	Beacon Building, Wichita, Kans.	Frank Middaugh.
Bessie Gold Dredging (constructing).	Holyoke Creek	do	68 William Street, New York City, N. Y.	G. H. McCloud.
Blue Goose Mining	Ophir Creek	Council		A. M. Kittilsen.
Candle Gold Dredging	Candle Creek	Candle		E. E. Pearce.
Christensen & Mebes	Center Creek	Nome		
Deering Dredging & Mining	Inmachuk River	Deering		Hank Fries.
Ernst-Alaska Dredging	Nome Beach	Nome	Seattle, Wash.	Joseph Ernst.

Incomplete list of mining operations in the Territory of Alaska—Continued.

SEWARD PENINSULA—Continued.

Name of company.	Situation.	Local address.	City address.	Manager or superintendent.
Flodin & Hutton (constructing).	Kougarok River	Shelton		Gerald Hutton.
Flodin Gold Mining & Dredging.	Solomon River	Solomon	732 Briar Place, Chicago, Ill.	Claus Flodin.
Flume Dredge	Ophir, Melsing, and Shovel Creeks.	Nome	Mills Building	C. E. Kimball.
Gold Beach Dredging [a]	Osborne Creek	do		Joseph Montgomery.
Goose Creek dredge	Goose Creek	Council		Thomas Mulligan.
Hansen, H. S	Center Creek	Nome		H. S. Hansen.
Hanson & Larsen		do		
Inmachuk Gold Dredging	Inmachuk River	Deering		W. W. Johnson.
Johnson dredge	Kuguruk River	Candle		Ivor Johnson.
Julian Gold Mining	Osborne Creek	Nome		A. J. Layton.
Kelliher dredge	Kougarok River	Shelton		James Kelliher.
Landstrom, A. J	Little Creek	Nome		
New Era Mining	Snow Gulch	do		
Nome Consolidated Dredging.	Wonder, Burbon, and Saturday Creeks.	do		E. E. Powell.
Nome Gold Gravel [a]	Cripple River	do	96 Liberty Street, New York City, N. Y.	E. R. Jordan.
Nome-Montana-New Mexico Mining.	Solomon River	do	Caswell Block, Milwaukee, Wis.	G. F. Ramsay.
Olson, O. W	Munroeville	Munroeville		O. W. Olson.
Pasadena Dredging	Windy Creek	Teller		Hugo Johnson.
Pioneer Mining	Anvil, Dexter, Little, and Glacier Creeks.	Nome		Jafet Lindeberg.
Plein Mining & Dredging	Nome River	do		J. F. Plein.
Ruby Dredging	Ruby Creek	Solomon		T. C. Powell, S. M. Gaylord.
Saunders Creek Dredging [a]	Saunders Creek	Nome		Andy Anderson.
Seiverson & Johnson dredge	Solomon River	Solomon	1165 Treat Street, San Francisco, Cal.	C. O. Seiverson.
Seward Dredging	do	Nome	200 Fifth Avenue, New York City, N. Y.	J. A. Webb.
Shovel Creek Gold Dredging	Shovel Creek			
Sioux-Alaska Mining [a]	Moses Gulch	Nome		P. T. Haugen.
Solomon Dredging	Solomon River	do	San Francisco, Cal.	J. A. Mallock.
Star Dredging	Mystery Creek	Council	507 Montgomery Street, San Francisco, Cal.	Charles Lubbe.
Warm Creek Dredging	Warm Creek	do	244 California Street, San Francisco, Cal.	A. E. Wellington.
Wild Goose Mining & Trading.	Ophir Creek	Nome	354 Pine Street, San Francisco, Cal.	F. M. Ayers.
Willow Creek Dredging	Willow Creek	Solomon	Russ Building, San Francisco, Cal.	J. L. Wilson.
Wise & Co	Center Creek	Nome		
York Dredging	Buck Creek	York		W. W. Johnson.

[a] Idle during 1913.

DESCRIPTION OF MINING OPERATIONS.

On the succeeding pages are given short descriptions of some of the important mines inspected.

SOUTHEASTERN ALASKA.

ALASKA GASTINEAU MINING CO.

The Alaska Gastineau Mining Co. is the operating company for the Alaska Gold Mines Co. and works the Perseverance mine in Silver Bow Basin, about 4 miles from Juneau.

The mine is in a wide fissured zone of slate and metagabbro, traversed by quartz lenses and veinlets. It was opened in early days by what is known as the Gilbert workings, the present fifth level, and later by a 1,400-foot crosscut, known as the Alexander crosscut, approximately 1,000 feet below the Gilbert development. Levels have been opened every 200 feet from the Gilbert to the Alexander workings, and a shaft sunk 600 feet to the thirteenth level, with stations every 200 feet. At Sheep Creek, about 3 miles south of Juneau, a 2-mile tunnel is being driven through the ridge between Sheep Creek and Silver Bow Basin to connect with a crosscut from the shaft on the thirteenth level. Through this tunnel will come all the ore to supply the mills now under construction on the shore of Gastineau Channel.

Power has been obtained from Gold and Lurvey Creeks in the basin, from a gas-engine plant on the beach near Sheep Creek, from one unit of a hydroelectric plant on Salmon Creek, and the surplus current the company could purchase at Juneau until the hydroelectric plant on Salmon Creek shall have been completed.

An old mill at Sheep Creek has been remodeled for making experiments and the flow sheet for the crushing plant has been devised. The plans call for a 6,000-ton daily capacity for the first unit of the new mill.

Living accommodations have been provided at the mine and there is a beach camp and club house with reading, pool, and billiard rooms.

The average number of employees during 1913 was 900.

The surface plant and underground workings were inspected June 7 and August 6, 1913.

ALASKA INDUSTRIAL CO.

The Jumbo, or what is commonly known as the Sulzer, mine of the Alaska Industrial Co. is situated on Hetta Inlet, on the west coast of Prince of Wales Island.

The main entrance to this mine is a crosscut at an elevation of 1,500 feet. The ore bodies so far opened have been near the surface and many of them have been worked as open cuts, although most of the work of late has been underground. The ore, which is mainly chalcopyrite, lies in discontinuous lenses in an altered zone between granite and limestone.

The ore is raised in buckets by a small air-driven hoist at a 187-foot winze below the crosscut, and is dumped into cars which are trammed by hand to the entrance of the crosscut. Here the ore is hand sorted before being dumped into the bunkers at the upper terminal of an 8,000-foot aerial tram, the lower terminal being at the wharf of the company on tidewater. Power is furnished by a hydroelectric plant on the beach. There were 35 men employed by the company at the date of inspection, November 4, 1913.

ALASKA JUNEAU GOLD MINING CO.

The Alaska Juneau Gold Mining Co., which owns the Alaska Juneau mine in Silver Bow Basin, about 3 miles from Juneau, is under the same management as the Treadwell.

The ore body here consists of a large fissured zone in a slate and a metagabbro, filled with veinlets of quartz. The ore has been mined

in an open pit and treated in a 30-stamp mill near the entrance to the mine. The grade of the ore having been tested, a tunnel, to go 6,538 feet, was started from Gold Creek. A raise now being driven on the ore will tap the upper workings. From the mouth of Gold Creek tunnel a tramway, which passes through several smaller tunnels, has been constructed on the hillside above the city of Juneau to carry the ore to the new pilot plant above the shore of Gastineau Channel. This will contain 40 stamps, 10 of which will be used for experimental work. The ore will be crushed and run through a trommel, the fine material going to a bin and the oversize to a conveyor belt, where it will be hand sorted and the waste discarded. The sorted ore will be recrushed, both the undersize from the trommel and the recrushed ore going to one-fourth-inch screens. The oversize will go to stamps and, with the material passing the one-fourth-inch screens, will pass to Wilfley roughers, a Chilean mill, amalgamating plates, and Wilfley tables. The concentrates will be cyanided. It is hoped by selection and elimination to handle 20 tons per stamp.

The company averaged about 150 employees a day during 1913.

Inspection was made May 30, 1913.

ALASKA TREADWELL GOLD MINING CO.

The Alaska Mexican, the Alaska Treadwell, and the Alaska United Gold Mining Cos. are closely allied and operate under the same management the Treadwell, 700, Mexican, and Ready Bullion mines on the east shore of Gastineau Channel, Douglas Island, about 3 miles from Juneau.

The properties are contiguous and are all connected underground, although a part of the ground between the Mexican and Ready Bullion mines does not contain ore. Until early in 1913 the ore from the various properties was hoisted through separate shafts. A central hoisting plant, with a capacity of 5,000 tons in 24 hours from a depth of 3,000 feet, was completed during the spring at the 700 shaft, and henceforth all ore except from the Ready Bullion mine will be raised there. Ore is hoisted in an 8-ton skip, and is taken from skip pockets at 400-foot intervals. A crushing-and-sampling plant is installed at the headframe, with separate ore bins for the output of each mine.

The mines are worked on the full-breast system, pillars alternating with stopes. The mines are all opened to an approximate depth of 1,800 feet, although the Bullion shaft is down 2,200 feet on the dip of the ore body. Although the main stoping areas are between the 1,400-foot and 1,700-foot levels, some ore is being drawn from the levels above, where the pillars are gradually crushing. Ventilation is natural, except for what air is provided by the exhaust of the machines.

From the central shaft the ore is delivered to the mills of the separate companies. In all 900 stamps are dropping. The pulp is run over amalgamating plates and vanners, and all the concentrates from the different mills is sent to a 100-ton cyanide plant.

The employees have organized what is known as the Treadwell Club, the housing for which includes an auditorium, reading rooms, pool and billiard rooms, bowling alleys, hand-ball court, swimming tank, baths, showers, and lavatories. The employees are all members of the organization, the dues of which are $1 a month.

The companies have adopted the following schedule of benefits for injured employees or their heirs, effective November 4, 1912:

1.	Fatal, no dependents, funeral expenses only.	
2.	Fatal, married, living with wife, no children	$1,000
3.	Fatal, married, living with family with children	1,000
4.	Additional allowance made for each child under 14 years of age	500
5.	Fatal, not married, with sole dependents in the United States	500
6.	Fatal, with or without children living in a foreign country, married	500
7.	Fatal, unmarried, with widowed mother sole dependent in foreign country	500
8.	Total blindness	2,000
9.	Loss of one eye	300
10.	Loss of two limbs	1,500
11.	Loss of one hand	500
12.	Loss of one foot	300
13.	Loss of either leg above knee	650
14.	Loss of either leg below knee	500
15.	Loss of both legs above knee	2,000
16.	Loss of both legs below knee	2,000
17.	Loss of either arm above elbow	650
18.	Loss of both arms above elbow	2,000
19.	Loss of either arm below elbow	500
20.	Loss of both arms below elbow	2,000
21.	Loss of either thumb	200
22.	Loss of either index finger	150
23.	Loss of either middle, ring, or little finger	150
24.	Loss of an ear	100
25.	Loss of the nose	150
26.	Loss of a great toe	150
27.	In all cases of fatal accidents funeral expenses not exceeding $125 will be allowed by the company.	
28.	In case of temporary disability, injured party, if unmarried and living with no dependents, will receive no compensation other than he is entitled to, such as surgical attendance and hospital facilities.	
29.	If married and living with family at time of accident, he will receive no compensation for first seven days, and thereafter for a period not exceeding three months, $1.50 for every day lost.	
30.	No relief under this schedule unless release is signed.	
31.	Amputation made against the advice of company surgeon will not be compensated for.	

There were 1,700 employees in and about the mines and mills.

Inspection was made May 22 and 27, 1913.

ALGUNICAN DEVELOPMENT CO.

The Algunican Development Co. is developing (under bond) the Jualin mine, on Johnson Creek, about 7 miles from Berners Bay.

Three veins in diorite have been opened by an adit. The approximate strike of the veins is N. 40° W., the dip is 60° to 90° NE., and the average width 5 feet. A winze was continued during 1913 to a depth of over 300 feet, but this work has been discontinued until heavier pumping machinery can be put in.

A horse tram was built between the mine and the bay, and a compressor plant erected at the mine. The property is equipped with a 10-stamp mill.

Inspection was made June 2, 1913.

CHICHAGOFF MINING CO.

The Chichagoff Mining Co. operates the Chichagoff mine on Klag Bay, on the west coast of Chichagoff Island, about 50 miles from Sitka.

The mine has been developed by two adit levels and a shaft on the ore. The vein occupies a shear zone in a graywacke, strikes N. 45° W., and dips 70° SW. The property is equipped with a 10-stamp mill and a hydroelectric plant.

DUNTON MINE.

The Dunton mine, at Hollis, on the eastern coast of Prince of Wales Island, was operated during the past year, under lease, by M. M. Reese.

An inclined shaft on a gold-bearing quartz vein is down 208 feet, with three levels driven on the ore. The vein strikes almost north, dips 30° west, and has a slate footwall. In places the hanging wall is slate and in places a porphyritic rock. The ore, which occurs in lenses, is hoisted in a self-dumping skip and crushed in a five-stamp battery. The pulp goes over amalgamating plates and concentrating tables, and the concentrates are shipped to the smelter.

There were eight men employed at the date of inspection, November 7, 1913.

EAGLE RIVER MINING CO.

The Eagle River Mining Co. owns the Eagle River group of claims at Amalga, about 7 miles from tidewater on the Lynn Canal.

The mine has been opened by 10 adit levels, with connections for ore handling and ventilation, and is equipped with a 20-stamp mill. A 7-mile horse tram connects the mill with the wharf on the canal.

IT MINING CO.

The It mine of the It Mining Co. is situated about a mile from tidewater on the north shore of Kasaan Bay, on the east coast of Prince of Wales Island.

The ore consists of chalcopyrite-magnetite lenses in an altered limestone and has been worked by open cuts and overhand stopes. A crosscut has been started to tap the ore zone at greater depth. A surface tramway connects the wharf with the mine bunkers.

This property was not active during the year.

MOUNT ANDREW COPPER & IRON CO.

The Mount Andrew mine of the Mount Andrew Copper & Iron Co. is situated 3,000 feet from tidewater on the north shore of Kasaan Bay on the east coast of Prince of Wales Island.

The vein, of a high-grade gold-bearing quartz, lies at the contact of a schist and a dolomitic limestone. It has been opened to a depth of several hundred feet by a shaft and by drifts in on the ore, with stopes to surface for ventilation. A five-stamp mill was recently completed.

The property was not inspected as it had been closed for the winter at the time the inspector was in the district.

PACIFIC COAST GYPSUM CO.

The property of the Pacific Coast Gypsum Co. is at Gypsum, on Chichagoff Island. The output is handled in the company's plant at Tacoma, Wash. The mine has been opened by a 160-foot shaft, from which two levels have been driven and a raise put through to surface for ventilation. Stopes are alternated with pillars and the mine is worked on the full-breast system.

RUSH & BROWN.

The property owned by Rush & Brown is situated on Prince of Wales Island, near the head of Kasaan Bay, on the northern side.

The ore bodies are chalcopyrite and chalcopyrite-magnetite, at or near the contact of a granitoid rock with a greenstone. They are opened by a shaft and two levels, from which stopes to the surface afford excellent ventilation. The ore is hand sorted at the mine bunkers and run down a balanced tramway about 300 yards to the main bunkers. From here it is hauled over a railroad about 3 miles to the wharf bunkers, where it is stored for shipment to the smelter.

Inspection was made November 8, 1913.

UNITED STATES SMELTING, REFINING & MINING CO.

The United States Smelting, Refining & Mining Co. has taken a bond on the Ebner mine, on the same belt as the Perseverance and Alaska Juneau, about 2 miles from Juneau on Gold Creek. Work was continued during the year on a crosscut started several years ago to open the ore body below the old workings. This tunnel is now more than half a mile in length. The property has been equipped with a new compressor, dynamo, and blacksmith house.

PRINCE WILLIAM SOUND DISTRICT.

BEATSON COPPER CO.

The Beatson Copper Co. owns the La Touche mine on the western coast of La Touche Island. The group comprises 19 lode claims and a mill site.

The chief ore is chalcopyrite; the ore body is a large lens, the limits of which have not been determined, and is opened by an open pit and one level, with raises to the pit. The pit is about 300 feet long and 150 feet high on the hill side, with an approximate width of 150 feet. The ore is milled, or shoveled into chutes, drawn into cars on the first level, and hauled 2,900 feet to the ore bins. Several hundred feet above, on the mountain side, a second ore body has been opened. All the ore is hand sorted before shipment to the smelter at Tacoma. A belt conveyor with a capacity of 100 tons an hour loads directly from the bins to a ship's hold.

Fuel oil is used in generating power for the electric motors and a seven-drill, two-stage compressor.

A hospital and physician are provided by the company.

Sixty men were employed at the time of inspection, July 27, 1913.

CAMERON-JOHNSON GOLD MINING CO.

The Cameron-Johnson Gold Mining Co. owns a group of 23 lode and 3 placer claims about 4½ miles from Shoup Bay, by an air line, and 20 miles from Valdez, by way of Shoup Bay. The claims are situated in a glacial valley formerly occupied by an arm of Shoup Glacier.

Although six veins have been uncovered, development has been confined to two, one near the crest of the ridge at an elevation of 4,300 feet, and one at the mill camp, 2,000 feet above sea level. Three drifts, totaling about 300 feet, have been driven at the upper camp. The vein here has an average width of 2 feet. The outcrop of the lower vein is 5 to 6 feet wide.

The ore from the upper works is sacked, transported about one-half mile by dog teams, and lowered over the edge of the glacier by means of a gasoline hoist. The ore from the lower development will go directly in cars to the mill bins. The ore on reaching the mill is passed over a 1½-inch grizzly to a 10 by 14 inch jaw crusher and thence to the bins. From these it is fed automatically to a battery of five 800-pound stamps, the pulp flowing over amalgamating plates to a Monarch table. Power is furnished by a 36-inch Pelton wheel under a 240-foot head.

There were 32 men employed at both camps at the time of inspection, July 21, 1913.

CLIFF MINING CO.

The Cliff Mining Co. operates, under a lease, a group of seven lode claims situated 12 miles from Valdez. A high-grade vein of gold-bearing quartz has been opened at the Cliff mine. The property is directly on the water's edge, and development has been comparatively easy and rapid.

The ore lies in a slate-graywacke formation, the main vein having a strike of N. 30° W., a dip varying from 60° to 90° N., and an average width of 18 inches. This vein has been opened by two drifts, from which a 500-foot shaft has been sunk and levels opened at the 300, 400, and 500-foot points. The lower level has been allowed to fill with water the past season as it is considerably below sea level and the cost of pumping is high. Overhand stopes are driven in the hanging wall and the vein is stripped. The exceptionally high-grade ore is sacked and the rest is sent directly to the chutes. Ore is hoisted in a 1-ton self-dumping skip to the first level and trammed to the mill.

In the mill the ore is crushed to 40 mesh by six Nissen stamps, run over amalgamating plates, and concentrated, the concentrates being shipped to the smelter at Tacoma. The power is furnished by three boilers, one of 70, one of 80, and one of 100 horsepower, which supply steam for the mill, compressor, and electric-light plants.

The employees numbered 25 underground and 11 on the surface at the time of inspection, July 19, 1913.

ELLAMAR MINING CO.

The Ellamar Mining Co. operates the Ellamar mine, at Ellamar, on the eastern shore of Virgin Bay, about 20 miles southwest of Valdez. There are 11 lode claims in the group which has been a steady shipper since 1900.

The mine is opened on seven levels from a 600-foot, three-compartment vertical shaft, crosscuts being driven from the shaft to the ore body. A cofferdam has been constructed about the outcrop to prevent the mine from flooding at high tide, and the upper levels are worked as an open cut. The ore body, which is about 250 feet long on the 200-foot level and over 50 feet wide, fills a fracture zone in a group of sedimentary rocks, chiefly slates. The ore is hand sorted and stored in bins. A belt conveyor transfers the ore directly from these to a ship's hold.

The employees numbered 32 at the time of inspection, July 29, 1913.

FIDALGO MINING CO.

The Fidalgo Mining Co. owns a group of 24 lode claims on the southeastern shore of Fidalgo Bay.

The ore, chiefly chalcopyrite, lies in a sheared zone through slate, graywacke, and greenstone, that strikes N. 30° W., and dips 67° NE. Two drifts connected by a raise, have been driven, the upper 130 feet long and the lower 450 feet. A 50-ton ore bin has been built at the mine and connected with one of 500 tons capacity on the wharf by a 2,000-foot aerial tram.

Eight men were employed at the time of inspection, July 29, 1913.

GOLD KING MINING CO.

The Gold King Mining Co. is developing under bond a group of 10 lode claims near the head of one of the eastern arms of Columbia Glacier. The property is about 6 miles from Shoup Bay by an air line, and 22 miles from Valdez over the traveled route by way of Shoup Bay and the glacier.

There are four known veins. These cut slate and graywacke and seem to be approximately parallel. Most of the work has been done on only two of the veins, especially the upper, which cuts the saddle 450 feet above the mill, at an elevation of 4,000 feet. On this vein a 110-foot crosscut has been driven to the ore and about 350 feet of drifting done. The average width of the ore throughout these workings is a little over 1 foot. Below the ridge, near the mill, two crosscuts have been driven to the vein, the upper cutting the ore at 55 feet, the lower at 340 feet.

The high-grade ore taken out in development at the upper vein was to be sacked and sledded over the snow until the work done will warrant connecting the upper and the lower veins.

At the mill the ore passes over a 1½-inch grizzly to a 6 by 8 inch Dodge crusher, from which it goes to a 3½-foot Huntington mill. From the mill the pulp flows over amalgamating plates to a Frue vanner.

Twenty-six men were employed at the time of inspection, July 22, 1913.

LANDLOCK BAY COPPER MINING CO.

The Landlock Bay Copper Mining Co. owns a group of seven lode claims on the south side of Landlock Bay. These claims were staked in 1898, acquired by the present owners in 1903, and the company incorporated in 1906.

There are four ore zones occupying shear zones through slate, graywacke, and greenstone. On the west side of the ridge on which the claims are located are two crosscuts, 70 and 285 feet long, that have intersected the ore, and shallow winzes. On the east side a 120-foot drift has been run, and below this a 187-foot crosscut. From the crosscut, more than 300 feet of drifting has been done, and a raise was being put up the past summer to connect the upper and lower level. Air is supplied to the workings, through an 8-inch pipe, by means of a 12-inch fan driven by a 3-horsepower gasoline engine.

A wharf and 800-ton bunkers have been constructed near the entrance to the lower crosscut, which is about 80 feet above sea level.

There were three men working at the time of inspection, July 29, 1913.

MINERAL KING MINING CO.

The Mineral King mine, 1 mile east of Bettles Bay, in the Port Wells district, was discovered in June, 1912. Five lode claims were staked.

There are three veins on the property, although work has been chiefly confined to one. This cuts a slate-graywacke series, strikes 53° N. 40° W., dips NE. and is 6 inches to 4 feet wide, averaging 18 inches. A shaft has been sunk 110 feet on the ore and drifts run on the vein about 200 feet from the 100-foot point. The property is equipped with a 16-horsepower boiler and a 12-horsepower hoist.

A mill site has been staked on the flat near tidewater, preparatory to the building of a mill.

SEA COAST MINING CO.

The Sea Coast Mining Co. is prospecting a group of 10 lode claims above the glacier on the eastern coast of Shoup Bay, about 14 miles from Valdez. The company planned to install a tram, a mill, and a hydroelectric plant during the summer.

SEALEY-DAVIS MINING CO.

The Sealey-Davis Mining Co. owns a group of 13 lode claims bordering on the eastern shore of Shoup Bay, about 14 miles from Valdez.

The vein, which cuts a slate-graywacke series, strikes N. 50° W., and dips 81° SW., and has been opened by a 60-foot open cut, two drifts, and a crosscut. No. 1 drift is 50 feet below the cut and is in 285 feet; No. 2 is 130 feet below No. 1 and is in 700 feet; the crosscut is 240 feet below No. 2 drift and is in 725 feet. The highest exposure on the vein is 650 feet above sea level. The average width of the fissure throughout the workings is 42 inches. During the summer of 1913 the high-grade gold ore was sacked for shipment to the smelter.

Inspection was made July 24, 1913.

THREE MAN MINING CO.

The Three Man Mining Co. owns about 40 lode claims tributary to Landlock Bay. The main group, known locally as the Dickey claims, is at the head of the bay, the Alaska Commercial group a little to the west of these, and the Montezuma group, on Copper Mountain.

The ore bodies at the Dickey group lie in shear zones in a slate-graywacke-greenstone series, with a general west-northwest strike and a dip to the north of 45° to 90°. They have been opened on 5 levels, with over 2,000 feet of development. Considerable ore, in which chalcopyrite is the main mineral of commercial value, has been shipped to the smelters.

Bunkers with a capacity of 800 tons have been constructed at sea level. An ore-sorting station has been built, as all the ore is hand sorted before shipment.

Six men were employed at the time of inspection, July 29, 1913.

KENAI PENINSULA.

GILPATRICK MINE.

The Gilpatrick is situated in the Moose Pass district, about 15 miles from mile 29, on the Alaska Northern Railroad. A mineralized dike well above timber line has been opened by several hundred feet of drifts and raises, and an arrastra installed for working the softer gold ore found near the surface. The property was idle during 1913.

GOLD STAMP MINING CO.

The Gold Stamp Mining Co. is developing a property on Bear Creek, 3½ miles from Hope. Several drifts have been driven on the veins and a two-compartment shaft sunk 110 feet, making a total of 900 feet of development. The building of a 10-stamp mill during the summer was projected.

KENAI-ALASKA GOLD CO.

The Kenai-Alaska Gold Co. owns a group of five lode and three placer claims on the north side of Falls Creek, about 4 miles from mile 26 on the Alaska Northern Railroad. The property was discovered in 1906, but not actively developed until 1910. A mill was erected in 1911.

The most work has been done on the Black Butte No. 2 claim, on a vein from a few inches to 3 feet in width, which cuts a slate-graywacke series that has an average strike of N. 70° E., and dips of 60° to 90° SE. The mine, at an elevation of about 4,500 feet, is opened by two crosscuts, the first 100 feet below the outcrop and the second 186 feet lower. Approximately 700 feet of development work has been done on the vein from the upper crosscut, and considerable ore has been stoped. The lower crosscut has intersected the vein, and development is being carried forward from that point.

Ore bins, which serve as a lower terminal for a jig-back tram to the upper crosscut, constitute the mine terminal for a Bleichert aerial tram to the mill. The tram is 8,200 feet long, with a drop of 2,400 feet between terminals.

At the mill the ore passes over a 1½-inch grizzly, the oversize going to a 7-inch by 9-inch Blake crusher, the undersize to the bins. From these it is fed to a Hendy 5-stamp battery, which crushes the ore so that it will pass a 40-mesh screen. The stamps weigh 1,000 pounds each and drop 6 inches 104 times a minute. The pulp flows

over amalgamating plates to a Risdon-Johnston concentrator and the tailings are impounded for future treatment.

There were 6 employees at the time of inspection, July 6, 1913.

MOOSE PASS MINING CO.

The Moose Pass Mining Co. is developing a prospect in the Moose Pass district, 14 miles from mile 29, on the Alaska Northern Railroad. The property includes five lode claims on a gold-bearing vein above timber line, and a mill site at the foot of the mountain. An open cut has been driven 35 feet on the vein, and a crosscut started 75 feet below this. A Little Giant mill, capable of crushing between 3 and 4 tons in 24 hours, has been installed, and a 10-foot by 2⅝-foot undershot wheel erected to furnish power for this mill and a 7-inch by 9-inch jaw crusher. The ore was to be passed over amalgamating plates and the tailings impounded.

PRIMROSE MINING CO.

The Primrose property, situated on Porcupine Creek, 5 miles southwest of mile 18, on the Alaska Northern Railroad, is owned by the Primrose Mining Co., of Seward. The vein was discovered in 1910, when four claims were located and several open cuts made.

Since then a crosscut just under the outcrop has been driven through the vein, a drift run 55 feet, and a winze sunk 21 feet on the vein. Both drift and winze opened high-grade gold ore. The vein is 3 to 30 inches wide, strikes approximately N. 28° E., and dips 80° E. in the lower drift, but considerably less at the surface. It seems to be parallel to a slate-graywacke contact of two of these beds.

In 1912 a small plant was installed about 300 feet downstream from the upper crosscut. This included a No. 4 Blake crusher, Little Giant mill, amalgamating plates, and a concentrating table. The ore is reduced to three-fourths of an inch by the crusher and ground to 40 mesh by the mill. The plates are 2½ by 7 feet, set on a grade of 2 inches to the foot. About 1 ton of concentrates is obtained for every 20 tons of ore crushed, and the tailings are allowed to flow into the creek.

Four men were employed when the property was inspected, July 10, 1913.

SCHEEN-LECHNER MINING CO.

The property of the Scheen-Lechner Mining Co. is situated on the north side of Falls Creek, about 4½ miles from mile 25, on the Alaska Northern Railroad. The ground was located in 1907, but the greater part of the development has been done since 1910. The group includes three lode claims on two gold-bearing quartz veins, a mill site, and a water right.

The veins, which strike N. 40° W., dip 46° NE., and cut a slate-graywacke series, are connected by a 100-foot crosscut and are developed on two levels, giving approximately 275 feet of backs. The total development is more than 1,500 feet. The upper vein is 8 inches to 15 feet and the lower 18 inches to 12 feet wide.

A mill to contain two Hendy 1,000-pound and two Nissen 1,450-pound stamps was in course of construction the summer of 1913. It was planned to crush the ore to 30 mesh, amalgamate on plates, concentrate on a Frue vanner and a Deister table, and impound the tailings for future treatment. A 6-foot impulse wheel under a 120-foot head was being installed to furnish power for the plant. A 2,800-foot aerial tram is to be installed to convey the ore from the mine to the mill.

The employees numbered 25 at the time of inspection, July 7, 1913.

WHORF COAL MINE.

A bed of lignite coal was opened near Seldovia, by W. G. Whorf, and about 1,600 tons of coal mined for local use.

WILLOW CREEK (SUSITNA DRAINAGE).

ALASKA FREE GOLD MINING CO.

The group of 16 lode claims, owned by the Alaska Free Gold Mining Co. and leased by William Martin, of Seattle, is situated near the head of Fishhook Creek, on the southern side of the valley, about 35 miles from Knik. The ground was located in 1906, and was prospected only in a small way until 1912, when the present operator procured an eight-year lease and erected a small mill.

Several veins have been opened by cuts. The main vein, opened by a large cut and a short drift on the ore, is 3 to 10 feet wide, strikes N. 20° W., and dips 38° to 40° SW. Both the hanging and the foot walls are blocky quartz-diorite, which is crossed by numerous small stringers. The mill, 1,800 feet below the mine, is connected with the workings by three jig-back aerial trams. One 2,250-foot span carries the cable from intermediate bins to the mill, the bins being connected to the mine workings by a 1,100-foot span. The tram buckets hold between 450 and 500 pounds of ore each, run on a five-eighths-inch cable, and are pulled by a one-fourth-inch haulage rope.

At the mill the ore goes through a jaw crusher, which reduces it to 1-inch size, and thence to bins, from which it is fed automatically to a 10-foot Lane slow-speed mill, driven eight revolutions per minute. No screen is used, as the height of the discharge—6½ inches above the die—and the feed water regulate the size of the product. Inside amalgamation is practiced. From the mill the pulp flows over two sets of plates to two Wilfley tables and is stored for future treatment.

There were 26 employees at the time of inspection, June 27, 1913.

ALASKA GOLD QUARTZ MINING CO.

The property of the Alaska Gold Quartz Mining Co. consists of a group of five lode claims, a fraction, and a mill site, near the head of Fishhook Creek, about 35 miles from Knik. The company was incorporated in 1906.

There are two veins—the Granite Mountain and the Independence—in a quartz-diorite. The Granite Mountain vein strikes N. 20° W., dips 16° to 17° to the southwest, and varies between 2 inches and 4 feet in width, with an average of 18 inches. The Independence vein

has a parallel strike but a steeper dip, varying between 38° and 42° to the southwest, and averages 30 inches in width. The aggregate development amounted to over 1,000 feet early in the spring of 1913.

The ore is conveyed from the mine to the mill by two jig-back aerial trams with five-eighths inch track cables and one-fourth inch haulage cables. The buckets hold 450 pounds of ore.

There are two units in the mill, a three-stamp battery with 350-pound stamps falling 7 inches 104 times a minute, and a Nissen stamp falling 6 inches 96 times a minute. The ore passes over a three-fourth inch grizzly before going to a jaw crusher, and is fed from the bins automatically to the stamps. A 40-mesh screen is used on both batteries, and the pulp is run over plates and concentrated, about 1 ton of concentrates being obtained for 75 or 100 tons of ore crushed. The tailings are impounded for future treatment. Power is furnished to the plant by a Pelton wheel under a 110-foot head.

There were 8 men at the property at the time it was inspected, June 27, 1913.

GOLD BULLION MINE.

The Gold Bullion mine, under bond to Hugh Doheny and L. C. Tomson, of Montreal, is situated on the divide between Willow and Craigie Creeks, about 33 miles from Knik. The group, which contains seven lode claims, was located in 1906, and a two-stamp mill was erected in 1907. Five stamps were added to the equipment in 1911 and the property bonded to the present operators early in the spring of 1913.

Five drifts have been driven on the vein, and considerable high-grade gold-bearing ore has been stoped. There has not been enough work done on the vein to determine its strike and dip with exactness, as it varies greatly at the points where it has been opened. Both the foot wall and the hanging wall are quartz-diorite, though at places near the surface the hanging wall has been completely eroded and the vein covered with broken fragments of country rock frozen together. Great care has to be observed in ventilating these parts of the mine, as the air quickly thaws the ground so that the hanging wall caves.

The ore is conveyed from the mine to the ore bins, 1,300 feet, on a jig-back aerial tram, and from the bins to the mill, 3,800 feet, by a second tram of the same type.

At the mill the ore is broken to 1½ inches by a 7 by 9 inch jaw crusher, and reduced to 50-mesh by the stamps. The pulp from the stamps is run over amalgamating plates and concentrated on a Wilfley table, the tailings being stored for future treatment. There are seven stamps in the mill, one battery of two and one of five heads.

There were 20 employees at the time of inspection, June 28, 1913.

SEWARD PENINSULA.

AMERICAN GOLD DREDGING CO.

The boat of the American Gold Dredging Co., constructed to handle the beach sands at the water's edge, was operated during the summer months at the mouth of Peluk Creek, east of Nome.

The dredge is of the flume type with close-connected buckets (capacity 1⅛ cubic feet), and the digging ladder is constructed to dig to a depth of 15 feet. The boat digs on a spud and the hull is 23 by 50 feet with a depth of 4 feet. A 50-horsepower gasoline engine, belted to a main shaft, furnishes all the power for the machinery of the boat. The flume is 70 feet long and 3 feet wide, with amalgamating plates set in undercurrents for a length of 16 feet.

Six men were employed at the time of inspection, September 23, 1913.

BLUE GOOSE MINING CO.

The dredge of the Blue Goose Mining Co. operates on a group of 10 claims on Ophir Creek, in the Council district.

The hull of the boat is 90 by 32 by 4½ feet deep. The buckets are close connected and have a capacity of 3 cubic feet. An 85-horsepower boiler, burning wood, furnishes power for the entire boat. From the buckets the gravel goes through a hopper to two shaking screens, the area of each being 5½ by 15 feet. In the first screen are three-eighths inch holes, and in the second one-half inch holes. Sprays are directed against the screens to break up and wash the gravel. They discharge to a stacker, the screened product going to the sluices. The boat digs 18 feet below the water line and is lighted by a steam-driven 5-kilowatt dynamo.

Inspection was made September 13, 1913.

CHRISTENSEN & MEBES.

Christensen & Mebes operated a lease on the Mint fraction claim on Center Creek, about 1½ miles north of Nome.

The ground, which was frozen, was being worked at the time of inspection through a 75-foot shaft; the workings were connected with four other shafts for ventilation. An area approximately 200 feet square was worked out during the summer with a crew of 16 men.

The equipment consisted of a 35-horsepower boiler, 50 steam points, an 8-horsepower hoist, and a 4-inch centrifugal pump, driven by a 14-horsepower gasoline engine.

Inspection was made September 8, 1913.

ERNST-ALASKA DREDGING CO.

The Ernst-Alaska Dredging Co.'s dredge worked the past summer on a group of claims just east of the city of Nome.

The dredge is of the flume type, with a hull 23 by 46 feet by 3 feet 10 inches deep. The flume is 7 feet long and 3 feet wide, and is set on a grade of 1¼ inches to the foot. The buckets are open connected, with a capacity of 1¾ cubic feet, and the digging ladder is built to dig to a depth of 15 feet. A 40-horsepower gasoline engine furnishes all the power for the boat, except the electricity used for lights, which is taken from the circuit that furnishes light to the city of Nome. The boat digs on a spud, and averages 700 cubic yards a day when in thawed ground.

Seven men were employed at the time of inspection, September 23, 1913.

FLODIN GOLD MINING & DREDGING CO.

The Flodin Gold Mining & Dredging Co. has two dredges on the Solomon River, one about 8 miles from Solomon, the other at East Fork.

The dredge at East Fork, the newer of the two, is gasoline driven and of the flume type. Its rated capacity is 1,000 cubic yards a day. Power is furnished by a 60-horsepower gasoline engine belted to a main-line shaft, which is in turn belted to the bucket line, winches, pump, and other machinery. The buckets have manganese steel lips and are of cast steel with a capacity of 2½ cubic feet. The pump is a 10-inch centrifugal, and elevates the water about 12 feet to the flume. The flume is 75 feet long, 30 inches wide, and has a grade of one-half inch to the foot with 20 feet of undercurrent. The boat digs on a spud and is built to dig to 10 feet. The bedrock is schist and limestone.

The dredge was being operated two 12-hour shifts with a crew of seven men when inspected on September 11, 1913.

FLUME DREDGE CO.

The Flume Dredge Co. operates three dredges in the Council and Solomon River districts. The two in the Council district are on Ophir and Melsing Creeks, and the one in the Solomon River district is on Shovel Creek.

The dredges are all of the flume type and are driven by gasoline engines belted to a main-line shaft, to which are also belted the winches, pumps, and bucket lines. They can dig to depths of 10 to 14 feet, and are fitted with 2½ cubic foot, close-connected, buckets. They are run two 12-hour shifts with a crew of six or seven men on each boat. All of these dredges dig on spuds and have a capacity of about 800 cubic yards a day.

The Ophir Creek work was inspected September 13, that on Melsing Creek, September 14, and that on Shovel Creek, September 18, 1913.

H. S. HANSEN.

During the past season H. S. Hansen operated a lease on the Rhoda claim, owned by the Miners & Merchants Bank, of Nome. This property is on Center Creek.

The ground was frozen at the time of inspection and was opened by a 71-foot shaft, the workings connecting with two other shafts for air. Approximately 80,000 square feet of bedrock was blocked out with a crew of three men, and was mined in three months with a force of 32 men.

Fuel oil was used for making steam. Equipment consisted of two boilers, one of 35 and one of 50 horsepower, a 22-horsepower hoist, 100 steam points, and a 5-inch centrifugal pump driven by a 16-horsepower gasoline engine.

Inspection was made September 8, 1913.

HANSON & LARSEN.

During the past summer Hanson & Larsen worked the Paystreak claim, 2 miles west of Nome.

The frozen ground was opened by two 75-foot shafts. The ground was blocked out in the spring with a crew of three men, and was mined during the summer with a crew of 12, a total of 15,000 to 20,000 square feet of clay bedrock being cleaned.

Fuel oil was used to generate steam under a 25-horsepower boiler. A 16-horsepower gasoline engine drove a centrifugal pump to elevate the sluice water.

Inspection was made September 3, 1913.

A. J. LANDSTROM.

A. J. Landstrom worked No. 4 claim, Little Creek, on lease from the Pioneer Mining Co.

The deposit, which was frozen at the time of inspection, was opened by a 40-foot shaft, connected with a second shaft for air. An area 150 by 200 feet was crosscut and the greater part of this worked out in three months with a crew of 15 men. The ground was thawed at night and hoisted in the day time.

The equipment consisted of a 25-horsepower boiler, 8-horsepower hoist, 30 steam points, and a 6-inch centrifugal pump driven by a 20-horsepower gasoline engine. Fuel oil was used for the generation of steam power.

Inspection was made September 4, 1913.

NEW ERA MINING CO.

The New Era Mining Co., an organization of Nome business men, is prospecting a group of lode claims and patented placer ground at the head of Snow gulch, about 10 miles north of Nome.

The claims are on a schist-limestone contact, both the schist and the limestone being traversed by a network of quartz stringers that show free gold. A shaft has been sunk 30 feet, a crosscut driven about 300 feet, and a number of surface pits have been opened, from which considerable ore has been sent to the mill.

The two-battery four-stamp mill has 1,000-pound stamps dropping 5 inches 90 times a minute. The ore passes over a 1½-inch grizzly to an 8 by 14 inch jaw crusher. The undersize and the crushed ore fall into a 30-ton bin from which they are fed by Challenge feeders to the stamps, which crush to 40 mesh, the pulp going over amalgamating plates to a Diester table. About 4 tons of concentrates is obtained from 100 tons of ore. Coal is used for fuel under a 45-horsepower boiler, which furnishes steam for the entire plant. A 25-horsepower engine is belted to the main shaft. This drives the mill and crusher. A 5-horsepower engine furnishes power for the table.

The property was idle at the time of the inspector's visit, September 8, 1913, but has since been bonded to a company that proposes to test the ground with diamond drills.

NOME CONSOLIDATED DREDGING CO.

The Nome Consolidated Dredging Co. has two boats in operation on Wonder and Burbon Creeks, just north of Nome. A third boat is under construction.

Both dredges are operated by electricity furnished by a central plant. A battery of three Sterling boilers, burning crude oil, furnishes steam for a turbine direct connected to a 650-kilowatt dynamo.

The current is sent over the transmission wires at 2,300 volts and stepped down to 440 volts on the boats.

The Burbon Creek dredge has close-connected buckets with a capacity of 7 cubic feet and is built to dig 32 feet below the water line. At the time of inspection it was working in ground that was frozen in places, its capacity in such ground being 2,500 cubic yards a day.

The Wonder Creek boat has 7 cubic foot, open-connected buckets, and the digging ladder is constructed to dig a depth of 52 feet below the water line. It was working entirely in frozen ground, and a thawing plant was kept in constant operation in advance of the boat. Both dredges are of the screen type and dig on spuds.

Inspection was made September 21, 1913.

NOME-MONTANA-NEW MEXICO MINING CO., CONSOLIDATED.

The dredge of the Nome-Montana-New Mexico Mining Co., Consolidated, was operated the past season on a group of claims at the junction of Solomon River and Shovel Creek.

The machinery of the boat is driven by steam power furnished by one 60 and one 30 horsepower boiler, each using coal for fuel. The hull is 85 feet in length and 35 feet in width. The buckets are open connected and have a capacity of 5 cubic feet. The ladder is constructed for digging a depth of 18 feet. The gravel from the buckets passes over shaking screens, with an area of 6 by 25 feet, to a link-belt stacker, the perforations in the screen ranging from three-eighths to 1½ inches. The screened product goes directly to the sluices. The boat digs on a headline and has a capacity of 1,600 to 1,700 cubic yards a day.

A crew of 9 men was employed about the boat at the time of inspection, September 18, 1913.

O. W. OLSON.

O. W. Olson worked a part of the Tundra Association ground, at Munroeville, under lease from the Pioneer Mining Co.

The 52-foot working shaft is connected to two others for ventilation. Crosscuts were driven from the ends of the drifts and the ground worked back to the shaft. The pay dirt lay on the schist bedrock with about 2 feet of the gravel above bedrock. The barren gravel above this was undercut and thrown back and the pay dirt, gravel, and bedrock were loaded into cars, which were trammed by hand to the shaft. About seven weeks was spent in opening the frozen gravel. During the period of active mining, about six months, a crew of 26 men was employed and approximately 3 acres of bedrock cleaned. The ground was thawed at night and the dirt mined and hoisted in the daytime, thus giving the maximum number of men the day work.

One 50-horsepower boiler furnished steam for 50 points, an 8-horsepower hoist, and a pump with a 2½-inch suction. A 20-horsepower gasoline engine drove a 5-inch centrifugal pump which elevated the sluice water 32 feet.

Inspection was made September 4, 1913.

PLEIN MINING & DREDGING CO.

The dredge of this company is working a group of claims on the Nome River, about 3 miles east of Nome, in an area where most of the ground is frozen. A thawing plant, consisting of one 35 and one 50 horsepower boiler, is kept constantly busy in advance of the boat. From 20 to 30 steam points about 20 feet long are staggered in rows (7-foot centers) about 100 feet ahead of the dredge. Crude oil is used under the boilers.

The hull of the dredge measures 36 by 76 feet by 5 feet 8 inches deep. It is equipped with a 150-horsepower boiler, which burns crude oil. The bucket line, stacker, and screen are driven by a 60-horsepower engine, a 10-inch centrifugal pump by a 20-horsepower engine, and the winches by a second 20-horsepower engine. The boat digs on a headline and is constructed for digging a depth of 24 feet. The gravel is washed in a revolving trommel with three-eighths-inch holes, the screened product going to the sluices, and the oversize to a bucket stacker. The dredge averages 900 cubic yards a day.

Eight men were employed at the time of inspection, September 23, 1913.

RUBY DREDGING CO.

The Ruby Dredging Co. operated its dredge the past season on Ruby Creek, a tributary of the Casadepaga River.

The dredge is of the flume type with a 60 by 32 foot hull, 4½ feet deep. The buckets are open connected and have a capacity of 2¾ cubic feet. The dredge handles approximately 1,000 cubic yards a day. The digging ladder is built to dig to a depth of 12 feet. The winches and bucket line are driven by a 40-horsepower gasoline engine, the 12-inch centrifugal pump is driven by a 50-horsepower engine. The boat is equipped with spuds, but it digs on a headline. The flume is 72 feet long, 3 feet wide, and built on a grade of 10 inches in 16 feet.

Seven men were employed at the time of inspection, September 17, 1913.

SEIVERSON & JOHNSON.

Seiverson & Johnson operated a dredge on a group of five claims and a fraction, about 1 mile below East Fork, on the Solomon River.

The dredge digs on a headline and is of the screen type, has 2½ cubic foot, open-connected buckets with manganese steel lips, and digs to a depth of 5 or 6 feet. Its digging ladder is built for about double that depth. Power is furnished by a 75-horsepower boiler burning crude oil. The gravel falls into a hopper from the buckets and runs to a revolving trommel, where it is broken and is washed by a number of sprays. The overside falls to a belt stacker and the screened product goes to the sluices. The bedrock is schist and limestone.

The boat was operated two 12-hour shifts with a crew of six men. Inspection was made September 11, 1913.

SEWARD DREDGING CO.

The dredge of the Seward Dredging Co., formerly known as the *Three Friends* dredge, operated the past season on the company's ground on Solomon River, about 6 miles from Solomon.

The dredge is steam driven, being equipped with one 100 and one 50 horsepower boiler; crude oil is used for fuel. The buckets are close connected and have a capacity of 5 cubic feet. They dump into a hopper which feeds a set of two shaking screens, each screen measuring 6½ by 12 feet and having perforations ranging from five-sixteenths to 1⅛ inches. A belt stacker takes care of the oversize and the material passing the screens goes to the sluices. The boat digs on a spud and has a capacity of 2,000 cubic yards a day.

There were 13 employees on the dredge at the time of inspection, September 18, 1913.

SHOVEL CREEK GOLD DREDGING CO.

The dredge of the Shovel Creek Gold Dredging Co., operated on Shovel Creek, about 2 miles above the junction of the creek with the Solomon River.

The dredge buckets have a capacity of 2½ cubic feet and are close connected. The ladder is constructed for digging to a depth of 15 feet. Gasoline engines are used to furnish power, the bucket line, screen, winches, and stacker being driven by an engine of 80 horsepower. A 40-horsepower engine drives a 9-inch centrifugal pump and a 5-horsepower engine drives a 2-inch pump and a 5-kilowatt dynamo. The boat digs on a spud and has a capacity of 1,000 cubic yards a day. The gravel is washed in a 20 by 3½ foot revolving trommel with three-eighth inch and one-half inch perforations, from which the screened material goes directly to the sluices and the oversize to a belt stacker.

Inspection was made September 18, 1913.

SOLOMON DREDGING CO.

The dredge of the Solomon Dredging Co. works a group of claims about 1 mile above East Fork, on the Solomon River.

The buckets are close connected and the digging ladder is constructed to handle gravel from a depth of 18 feet, although the present work is in ground about half that depth. The hull is 45 by 80 feet, with a depth of 6 feet. Fuel oil is used for the generation of power under a 135-horsepower boiler. A 60-horsepower engine operates the bucket line and hoist, an 8-horsepower engine the swinging winches, and a 90-horsepower engine the pump, screen, and stacker. From the hopper the gravel goes to a 5 by 30 foot revolving trommel, with one-fourth, three-eighths, one-half, and 1½ inch holes; the oversize goes to a 28-inch belt stacker. The sluice grade is 1½ inches to the foot. The boat digs on a spud.

A crew of 10 men was employed at the time of inspection, September 16, 1913.

STAR DREDGING CO.

The Star Dredging Co. has a dredge on claim 3 above Mystery Creek, about 3 miles from Council.

The dredge is of the flume type, and the hull is 28 by 50 feet by 5 feet deep. The buckets are cast steel with manganese-steel lips. They are open connected and have a capacity of 2⅝ cubic feet. The bucket line and winches are driven by a 35-horsepower gasoline engine. Another 35-horsepower boiler furnishes power for a 10-inch centrifugal pump, which elevates the sluice water. A 7-horsepower engine drives the clean-up pump and the dynamo that furnishes the light for the boat. The flume is 60 feet long and 5 feet wide, is set with a grade of 8 inches in 10 feet, and has railroad-iron riffles. The boat digs on a spud and employs a crew of 7 men.

Inspection was made September 14, 1913.

WILD GOOSE MINING & TRADING CO.

The Wild Goose dredge is working on claim 23 on Ophir Creek, in the Council district, advancing downstream over the group of claims controlled by the company.

The hull of the boat is 75 by 32 feet, with a depth of 6 feet. The buckets are of 3½ cubic foot capacity, are close connected, and have manganese steel lips. Power is furnished by a 150-horsepower gasoline engine. The buckets discharge into a hopper, which feeds a 27 by 4½ foot revolving trommel, the perforations of which grade from three-eighths to 1 inch. The oversize goes direct to a tailing stacker, and the screened product goes to the sluices. The dredge digs 25 feet below the water line and handles approximately 2,000 cubic yards a day.

Inspection was made September 13, 1913.

WILLOW CREEK DREDGING CO.

The Willow Creek Dredging Co. operated its dredge the past season on a group of claims on Willow Creek, a tributary of the Casadepaga River, about 2 miles above the junction of the streams.

The hull of this dredge is 50 by 60 feet, with a 2-foot overhang and a depth of 4 feet 4 inches. The buckets are open connected, have a capacity of 3 cubic feet, and are made of cast steel with manganese steel lips. Gasoline engines are used for power, the bucket line, screen, stacker, and 4-inch pump being driven by one of 60 horsepower. Two-inch and 8-inch centrifugal pumps are driven by a 30-horsepower engine.

From the hopper the gravel passes through a revolving trommel with three-eighths, one-half, and 1 by 2 inch perforations, the oversize going to the stacker and the screened product to the sluices. The boat digs on a head line, is built to work to a depth of 15 feet below water line, and has a theoretical capacity of 2,000 cubic yards a day. A crew of seven men is employed.

Inspection was made September 16, 1913

WISE & CO.

The Linda claim on Center Creek, belonging to the Miners & Merchants Bank of Nome, was worked during the summer under lease by Wise & Co.

The ground was opened by two main shafts, one 70 and one 80 feet deep. From these shafts approximately 130,000 square feet of ground was mined in seven months with a crew of 53 men. In thawing the gravel the steam points were driven during the day, the steam was turned on at night, and the thawed ground hoisted the next day.

The equipment consisted of four boilers, two of 30 and two of 45 horsepower, 100 steam points, one 10 and one 12 horsepower hoist, and an 8-inch centrifugal pump driven by a 44-horsepower gasoline engine. Fuel oil was used under the boilers.

Inspection was made September 8, 1913.

Very respectfully,

SUMNER S. SMITH,
Mine Inspector for Alaska.

The SECRETARY OF THE INTERIOR.

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