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PLACER MINING IN ALASKA IN 1925

By

Norman L. Wimmler

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Introduction:

This report is written to give early publication to review of placer mining in Alaska in 1925 and is the fourth of a series of such annual reports by the writer that have been written for publication in the Annual Report of the Mine Inspector for the Territory of Alaska [1] in accordance with a cooperative agreement between the U. S. Bureau of Mines and the Territory of Alaska.

(1) These reports can be obtained from B. D. Stewart, Mine Inspector, Juneau, Alaska, or the U. S. Bureau of Mines at Anchorage, Alaska.

The large number of distinct placer mining districts, scattered as they are over a vast territory, makes it impossible to visit only certain ones each season. The season's field work of the writer in 1925, was conducted in the Fairview, Cache Creek,, Hope, Sunrise, Girdwood, Hot Springs, Tolovana, Fairbanks, Richardson, Tenderfoot, and Valdez Creek districts, which were visited in the order named.

each annual report, under "Review by districts", attention has been given mainly to those districts and operations visited during the current season, with accounts of the conditions existing, and the mining methods employed at the more representative operations are given. In order to include districts not visited during the season, [redacted] information obtained from various reliable sources regarding the principal operations conducted in those districts has been used. During the past four years most all of the more important placer mining districts have been visited and reported upon, so that this series of four annual reports includes first hand information on practically all of the principal placer mining operations in Alaska. This report on"Placer Mining in Alaska in 1925" was written during October, before the production statistics which are annually obtained and published according to law by the Mineral Resources division (Alaska branch) of the U. S. Geological Survey were available for 1925. The writer is greatly indebted to the many Alaskans for their helpful cooperation, especially to those he met during his field studies and to those who supplied him with the information concerning the operations conducted in those districts not visited during the season.

A study of placer mining in Alaska was begun by the writer in 1922 for the U. S. Bureau of Mines and after the close of the 1924 season, the report on "Placer Mining Methods and Costs in Alaska" was written. This report should soon be available for distribution as a bulletin of the U. S. Bureau of Mines.

Production:

The total value of the gold and silver produced by all Alaskan mines from 1880 to 1924 inclusively, a period of 45 years, is $357,257,000. Of this amount, its placers have produced $236,722,326 in gold and $1,150,000 in silver. More than $200,000,000 of this placer gold has been produced since 1900. The placer mining was at its height in 1906 when the production was $18,600,000 in gold and 8000 men were employed in mining it. In 1923 the placers of Alaska produced $3,608,500 in gold from its 446 summer mines and 75 winter mines, with 2388 men employed. The placer gold production in 1924 was $3,599,382, the lowest up to that time since 1900.(2)

(2) Statistics from Mineral Resources of Alaska: U. S. Geological Survey.

Statistics on the total placer gold production for 1925 are not yet available but all indications are that it was a little less than that of 1924. Early reports indicated

a decreased production in the Fairbanks district, as most of the properties on the more important creeks, where many of the former operations were conducted, have been acquired by dredging interests. The production from Seward Peninsula will also show a decrease as one of the three largest dredges there did not operate, while the other two did not start until early in September. A number of the other dredges there were also late in starting. Some of the large hydraulic elevator plants on the Seward Peninsula were also curtailed in their operation through lack of water. While a number of the interior districts made a smaller production, others made material increases. The Yentna, and some of the Coastal districts made larger productions.

It is estimated that about 2700 men were engaged in placer mining, prospecting and development work during 1925, with from 500 to 800 of these men employed by dredging interests mainly on work preparatory to future operation, principally in the Nome and Fairbanks districts. The low stage in placer gold production was no doubt reached in 1925 and pending the completion of extensive dredging developments now under way, a large increase by dredging should result in 1926.

A small amount of platinum was recovered as a by-product at the gold placer mines on Dime Creek on the

Seward Peninsula and 17 tons of stream tin, a by-product of gold placer mining at the operations in the Tofty area in the Hot Springs district, was shipped out, in 1925. A shipment of 9½ tons of placer tin is also reported from Tin City on the Seward Peninsula.

The following table giving the value of gold produced by Alaskan placer mines according to districts from the first year of production to 1923, inclusive, has been compiled to show the relative importance of the various districts in respect to past production. Grouped as "All others", are included the Yentna, Nizina, and the Kenai Peninsula region, as a segregation was not available. Due to some adjustment of the production statistics prior to 1922, which was made in 1923 by the U. S. Geological Survey, the total given in the table is $992,548 more than now reported by the Survey.

Value of Gold and Silver Produced by Alaskan

Placer Mines by Districts

(Compiled mainly from statistics published by U. S. Geological Survey.)

District	First year of production	Value of gold produced to 1923, incl.
Forty Mile	1886	$6,524,000
Circle	1894	6,850,000
Rampart	1896	1,619,000
Seward Peninsula	1897	84,650,185
Kobuk	1898	338,000
Koyukuk	1900	4,921,100
Hot Springs	1902	6,330,400
Fairbanks	1903	72,576,000
Bonnifield	1903	298,000
Kantishna	1903	522,000
Valdez Creek (a)	1903	490,000
Richardson	1905	1,744,000
Chandalar	1906	295,500
Ruby	1907	5,496,000
Innoko-Tolstoi	1907	3,165,000
Kuskowim Region	1908	2,622,000
Eagle & Seventy Mile	1908	370,000
Iditarod	1910	19,230,000
Chisana	1913	667,000
Marshall	1914	1,139,000
Tolovana	1915	4,200,000
All others (b)	Since 1880	10,068,307
		$234,115,492

Silver produced from placer mining to 1923 incl. 1,131,845

$235,247,337

(a) Personal estimate
(b) Mainly the Yentna, Nizina & Cooks Inlet districts and Southeastern Alaska.

Placer Mining in 1925:

The season of 1925, in general, was a normal one for placer mining from an operative view point, and one of exceptional activity in dredge development. The acquisition of properties by dredging interests caused the suspension of a number of mining operations, while in other cases, operations were not conducted on the usual scale while investigations were under way. Many of the operations in most of the interior districts and some in the northern part of the Seward Peninsula were handicapped for several months through lack of water occasioned by a long spell of hot dry weather. A water shortage especially for hydraulic mining is, however, the usual condition in most of the interior districts. Southwestern Alaska districts had a good season with no pronounced water shortage. High flood conditions developed by exceptionally heavy rains during September were quite general throughout Alaska, although very little damage to the placer operations has been reported.

During 1925, there were 27 dredges operated in Alaska; 16 on the Seward Peninsula and 11 in the interior and other districts. The companies operating dredges in 1925 are listed below, each company operating one dredge, except as noted.

Gold Dredges Operated in Alaska in 1925

Seward Peninsula

Nome district:

Bangor Dredging Corporation	Anvil Creek
Dexter Creek Dredging Co.	Dexter Creek
Dry Creek Dredging Co.	Dry Creek
U.S.Smelting,Refining & Mining Co.No.2,	Nome Tundra
U.S.Smelting,Refining & Mining Co.No.3,	Nome Tundra
U.S.Smelting,Refining & Mining Co.No.4,	Snake River

Solomon district:

Lomen Reindeer & Trading Co.	Solomon River
Shovel Creek Dredging Co.	Shovel Creek
Iverson & Johnson	Big Hurrah Creek

Council district:

Crooked Creek Dredging Co.	Crooked Creek
Northern Light Mining Co.	Ophir Creek

Casadepaga district:

Casadepaga Mining Syndicate	Canyon Creek

Koyuk district:

Dime Creek Dredging Co.	Dime Creek

Kougarok district:

Bering Dredging Corporation	Kougarok River

Fairhaven district:

Keewalik Mining Co. No. 1	Candle Creek
Keewalik Mining Co. No. 2	Candle Creek

Yukon Basin

Circle district:

Berry Dredging Co.	Mammouth Creek

Fairbanks district:

Chatham Gold Dredging Co.	Cleary Creek
Fairbanks Gold Dredging Co., No. 1	Fairbanks Creek
Fairbanks Gold Dredging Co., No. 2	Fairbanks Creek

Iditarod district:

Northern Alaska Dredging Co.	Otter Creek
Riley Investment Co.	Otter Creek

Innoko district:

Flume Dredge Co.	Yankee Creek
Flume Dredge Co.	Little Creek
Guinam & Ames Dredging Corporation	Ganes Creek

Kuskokwim Region

Mt. McKinley district: (McGrath)

Kuskokwim Dredging Co.	Candle Creek

Susitna Region

Yentna district:

Thos. D. Harris & Co.	Cache Creek

The Dry Creek, and the two Keewalik dredges on the Seward Peninsula, which were idle in 1924, resumed operations in 1925; while 5 dredges operated on the Peninsula in 1924 were idle in 1925. All of the dredges in the interior and other districts continued operations in 1925 and a new dredge was operated on Little Creek in the Innoko district. The dredge on Fish Creek was erected during the season but was not completed in time to operate. The dredge for the Tulusak River in the Kuskokwim region was landed at Aniak during the summer but will not be erected and operated until next season. At least two new dredges will start operations, and three dredges idle in 1925 will resume in 1926. About 50 percent of the placer output in recent years has been produced by dredging. The production by dredges in 1925 ~~was probably a little less than~~ will closely approximate that of 1924, when they produced $1,563,633 in gold.

The year 1925 was an unusually active one in dredging developments and the investigation of possible dredging areas. Drilling was done on Ester, St. Patrick, Goldstream, Dome, Little Eldorado, and Cleary Creeks, and on the upper Chena River and its tributaries, in the Fairbanks district; on the Salchaket River and its tributaries Caribou and Butte Creeks; on Ingle Creek in the Forty Mile district;

on Moore Creek and the Tulusak River in the Kuskokwim Region; on the Nome tundra; on American Creek, a tributary of the Niukluk River; on Coal Creek, a tributary of Solomon River, and elsewhere on the Seward Peninsula, and in the interior. The placers on Coal Creek in the Circle district, Nome Creek in the Fairbanks district; Moose Creek in the Bonnifield district; the Tofty and Eureka areas in the Hot Springs district; the Katzehin and Shuck Rivers near Juneau; were among those prospected and investigated for dredging possibilities. A large dredging field is reported to have been developed on Bonanza Creek, a stream emptying into Norton Sound about 125 miles east of Nome.

The most important dredge development underway is that of the Fairbanks Exploration Co. in the Fairbanks district. This company has had from 250 to 425 men engaged during the year in drilling, surveying, ditch construction, building construction, experimental work in stripping overburden and other investigative and construction work. Goldstream and Cleary Creeks are to be the first to be dredged, although it will probably be three years before dredges will be ready to start operations there. A 12 mile ditch and some small local ditches were constructed. A resurvey was made of the 79 mile ditch under consideration for bringing water from the Chatanika River as far as Goldstream Creek, but its construc-

tion has as yet not been decided upon.

The Goldfields American Development Co., large British interests, were very active in drilling and investigating dredging ground in the Fairbanks district up until the middle of June, when the company withdrew.

A transaction of great importance to the future of dredging was consummated during 1925 when the U. S. Smelting, Refining and Mining Co. acquired the dredges, equipment and all holdings of the Hammon Consolidated Goldfields Co. at Nome and those of the Nome Mining Corporation (formerly known as the Alaska Mines Corporation). This company operated a 3-1/2 cu. ft. dredge on Snake River, and two of the 9 cu. ft. dredges were operated for a short period in the fall. The main work conducted was in thawing a large volume of ground with water at natural temperatures, for which a 1700 point outfit was used. Systematic experiments and studies were conducted in thawing, which, according to reports, have greatly improved the efficiency of the thawing and reduced its cost. Thawing with water at natural temperatures has its problems which must be solved for different conditions. These problems are now generally well understood and this method of thawing is being used with great success at many of Seward Peninsula and interior dredging operations where frozen ground is encountered and has been the chief factor in

extending the dredging fields of Alaska.

Hydraulic mining was conducted as usual in most of the districts. Water shortage in some of the interior and Seward Peninsula districts handicapped those operations during mid-season, but in general hydraulic mining experienced a good normal season. This was particularly so in the Yentna, and Nizina districts, and on Kenai Peninsula. Hydraulic operations in the interior are conducted mostly on a small scale being limited by the adverse conditions for obtaining ample water supplies. The larger operations are conducted mainly on Seward Peninsula and in the districts of Southwestern Alaska. On the Seward Peninsula it has been necessary in most instances to construct long ditch lines to obtain a water supply under pressure, but even so, periods of drought are common. In southwestern and southeastern Alaska, large water supplies are obtainable under high pressure by comparatively short ditches or other conduits, and as many of the streams are glacial fed, an exceptionally good water supply is then available during the hottest and driest of weather. The use of scrapers and cableway excavators operated by steam for stacking tailings has been adopted by a number of the interior hydraulic operations where the water supply is small. No new hydraulic plants of importance were reported to have been installed during 1925.

Steam scraper plants still predominate among the mechanical methods of open cut mining, although their use is rapidly on the decrease. Several scraper plants were operated on Goldstream Creek during 1925, but with the acquisition of most of the ground on this creek by dredging interests most of the operations formerly conducted here have suspended. A few scraper operations were conducted in the Innoko district, Iditarod, Forty Mile and Seward Peninsula districts, but scrapers are now more generally used in conjunction with hydraulic or other open cut operations for scraping bedrock or stacking tailings. The day of the steam scraper as a mechanical method of placer mining in Alaska is doomed, as the dredge, cableway excavator or drag line excavator can mine most of the ground where scrapers are applied, more efficiently and economically. No cableway excavators or dragline excavators were reported to have been operated during 1925, although cableway excavators were used successfully in the Fairbanks district for stacking tailings at two hydraulic operations. Dragline excavator operations are to be resumed on Willow Creek in the Iditarod district next season.

Drift mining was conducted mainly in the Fairbanks, Tolovana, Hot Springs, Ruby and Koyukuk and to a lesser extent in the Circle, Forty Mile, Chandalar and several other interior districts, and in the Nome, Koyuk, Inmachuck and

Fairhaven districts on the Seward Peninsula. Some 4 or 5 of the larger operations employed as many as 20 men while most of the others were conducted on a very small scale in comparison. Placer favorable for profitable drift mining has practically been depleted in most of the districts and in others drift mining is giving way to dredging.

A large number of small groundsluicing and booming operations followed by the shovelling-in, or some other means usually involving much manual effort, were conducted. Operations of this kind are conducted in all of the districts and in some this method of mining is the only one employed. Individually, most of them produce a very small amount of gold each season but in the aggregate, the amount is considerable. These methods involve very small investments in equipment, and being generally conducted by one or two prospectors who live in the immediate vicinity, can better meet conditions of a small water supply and are often the most practical for mining small areas or isolated patches of placer and hence will always be popular in certain districts and with a certain class of miners.

A number of placer discoveries were reported during 1925, but as has been the case with most of the discoveries within the past ten years, they have been made mostly in old districts and on creeks that were formerly well prospected and mined and are so restricted to very limited possibilities.

Prospecting is increasing and many of the prospectors are in the more isolated places in search of virgin fields. Discoveries made in recent years on "new" creeks have unfortunately not turned out well. No new district of importance has been discovered since Tolovana in 1915, although with a vast area still to be prospected or reprospected, discoveries of importance can be expected. A stampede of some 40 men was made into the Valdez Creek district during the summer when news leaked out that several miners, who had been in the district since its discovery in 1903, had found and mined a little coarse gold on a high rim on Timberline Creek. Some years ago this would have attracted very little attention. However, such rushes stimulate new interest and usually result in the reprospecting ~~of both old and new areas~~.

Transportation facilities between the States and Alaskan ports, and to the various points in Alaska, remained practically the same as in 1924. Freight rates remained practically unchanged, although passenger rates on ocean and Yukon River steamers were in most instances increased 10 to 15 percent. The operations of the Alaska Railroad and its weekly steamer service on the Tanana River and below, on the Yukon River as far as Holy Cross, is proving its benefit to the mining industry of the Interior. The Alaska Road Commission did most valuable work in extending its roads and

trails in the various districts as did the Bureau of Public Roads with its road construction in the forest reserves of southeastern and southwestern Alaska where mining is conducted.

Many aeroplane trips were made from Fairbanks to various points, including Nome, and such isolated places as Wiseman, McGrath, Kantishna and numerous others. A large six passenger plane was added to this fleet last spring. Other interests operated a plane out of Seward to Cook Inlet and westward points, during the latter part of the summer, and it is reported that this service from Seward will be improved and extended next year. A company was being financed in Alaska to operate a small dirigible. A number of the communities prepared landing fields at their own expense and last spring the Territory of Alaska appropriated a small sum of money out of the Territorial road fund with which these fields were improved and others prepared at other towns. Air transportation has proved its reliability and benefit in Alaska, bringing as it does the isolated places to within a few hours travel which would require weeks to reach by the regular means of transportation. The development of air transportation should be given all possible assistance.

The review of placer mining and conditions in the various districts follows.

REVIEW BY DISTRICTS

Southeastern Alaska

The placer gold output during 1925 from the southeastern districts has been very small, no new operations being reported. A hydraulic plant was operated by a crew of four at the head of Silver Bow Basin back of Juneau, and several small open cut and prospecting operations were conducted elsewhere in that district. The usual beach mining at Lituya Bay, Yakataga and Yakutat was carried on by a small number of individual miners. The gold placers of Porcupine, McKinley and Cahoon Creeks in the Porcupine districts were consolidated a year or so ago, and the hydraulic outfit formerly on Glacier Creek was purchased and moved to Porcupine Creek. Los Angeles interests had an option on these holdings but it is understood that they were not active this season. The original holders, however, had about six men at work this season on construction and development. Hydraulicking will possibly start next season. It is claimed a large area of Creek placer ranging from 20 to 40 feet and more in depth has been prospected with favorable results. A large water supply is available at heads up to 375 feet. The Creek gradients are low, so that it is planned to operate with hydraulic elevators. This property lies 40 miles northwest of Haines, the government road between these two places being reported as having been completed this fall. Juneau

interests investigated the dredging possibilities of the Katzehin River during the season, and it is reported that other interests were investigating the placers on the Shuck River in the Wyndham Bay district with a view to dredging.

Copper River Region

Nizina District

With favorable reports from the three large hydraulic operations conducted in the district, a satisfactory normal production is indicated. The principal operations were those of the Dan Creek Hydraulic Mining Company which employed a crew of about eighteen men in hydraulicking both the bench and creek placer on Dan Creek; and the two hydraulic operations of Jno. E. Andrus on Chititu Creek, where a total of thirty-five men were employed. In handling the many large boulders at Dan Creek, they were formerly "bulldozed" to break them to a size whereby they could be piped into the sluices. A small air compressor operated by water power was installed this season for delivering air to one drill. The boulders are now drilled and then blasted and a very appreciable saving in the explosives cost is reported. These operations were discussed in "Placer Mining in Alaska in 1923" by N. L. Wimmler, as published in the Annual Report of the Mine Inspector for Alaska - 1923. A little hydraulicking was also done on Rex Creek. A little drift mining was

conducted on the Dan Creek benches and the small amount of work done on Young Creek was principally in prospecting.

Chistochina District

The main placer mining conducted in this district during this season was the hydraulic operation of J. M. Elmer on the Slate Creek Mining Company's property on Slate Creek, where about fifteen men were employed. It is stated that the Alaska Middefork Mining Company operated a hydraulic plant on the Middefork of the Chistochina River, and several small open cut operations were conducted elsewhere in this district, although these reports have not yet been confirmed.

Nelchina District

Several small open cut operations were conducted on Albert and Alfred Creeks and some very favorable cleanups are reported. About eight men were mining in the district.

Kenai Peninsula Region

Placer mining in this region is restricted mainly to the Sunrise, Hope and Girdwood districts, of relative importance in the order named. A few small operations of a prospecting nature were also conducted at other localities on Kenai Peninsula and adjacent to Cooks Inlet. In the above mentioned districts, 7 major hydraulic operations employing 24 to 36 men; 6 small hydraulic operations with 7 men; 4 groundsluicing operations with 4 men; and 2 "bar" sniping

operations with 2 men; were active during 1925. Besides these several men were busy doing their annual assessment work. In general, the operations in the Hope and Sunrise districts have experienced a favorable season. The large scale development underway on Canyon Creek and the numerous places elsewhere on Six Mile Creek and its tributaries where old channel deposits are showing promise, indicate that this region still has a long active placer life. This is especially interesting for the first placer gold in Alaska was discovered on Kenai River on the Kenai Peninsula in 1848 by Russians. Starting in 1884 and following up to about 1895, American prospectors discovered gold on many of the creeks and the richer areas were mined by the earlier known methods. Since 1895, placer mining has been restricted chiefly to those streams tributary to Turnagin Arm, the most important ones being Resurrection, Six Mile, Crow Creek, and their tributaries, although there were other steams such as the Kenai River and its tributary Cooper Creek, where active placer mining was conducted up to recent years. The placer gold production from the Kenai Region to date is not definitely known, but the placer production from Kenai Peninsula and Crow Creek (Girdwood district) is estimated to have been close to two millions of dollars. Placer mining in this region is now done mainly by hydraulicking, using the method of "piping into the head of the boxes, with the stacking of the tailings

by giants where natural dump room is lacking as in the case of the creek deposits.

Failures have been common in the region, in part, due to inadequate prospecting or to conditions particularly adverse to the methods that were employed. In 1905, a dredge failed on Resurrection Creek for reasons stated to have been the numerous large boulders present and further to an improperly designed dredge. A small dredge was erected on upper Kenai River in 1911 and also failed partly for similar reasons. Hydraulic elevator operations were not successful when used on Resurrection and Six Mile Creeks. In general, the placers in this region are low grade, the gradients of the creeks are low, and the gravels are heavy, often with many large boulders. While these conditions are adverse to low cost operation, the streams, particularly those tributary to Turnagin Arm, are mostly glacier fed so that large steady water supplies are generally available. The topography also permits the bringing of this water to the operation under high pressure by comparatively short ditches and pipe lines. With such water supplies, hydraulicking has and can be accomplished at considerable lower costs than in other districts not so well favored. The mining season is also considerably longer than in most of the other Alaskan districts, operations can get under way by May 15 and

continue to October 1 and in some instances until November 1.

The origin of the placer gold of the Kenai region is mostly from the erosion of the gold veins existing in the slates and gray wackes occurring there, but the region has been glaciated so that some of the gold-bearing material may have been transported by the glaciers from sources far distant from its present location. The channel deposits occurring at elevations well above the present streams as along Six Mile, Canyon and Mills Creek are, at least in part, the remaining portions of preglacial placers. Excepting such placers, the present placers are mostly the reconcentration by the present streams of the material eroded and transported by the glaciers, which may include some preglacial placer, although some of the gold has been provided by the post-glacial erosion of the local lode formation.

Hope - Sunrise District

The Hope district is best reached from Rainbow, a station on the Alaska Railroad, twenty miles from Anchorage. A small launch operates from Rainbow to Hope, which lies 8 miles distant across Turnagin Arm, and on to Sunrise. A wagon road follows up Resurrection River from Hope to the placer operations there. A trail leads from Hope to Sunrise, a distance of 9 miles. A wagon road from Sunrise

follows up Six Mile Creek to the Canyon Creek Dev. Co. camp, a distance of 9 miles. The Bureau of Public Roads is constructing a splendid road from Mile 29 on the Alaska Railroad to Sunrise, a distance of 37 miles. This road was completed for 20 miles last season and was to be completed by this fall to the Canyon Creek Dev. Co. Camp, 8 miles beyond. This road makes the district very accessible and is doing a great deal towards its development. Most of the supplies for the Sunrise district will in the future, be brought in this way, motor trucks to be used for transport.

Hope District

12 95 111 The principal operation in the Hope district is the hydraulic operation of the Mathison Mining Company located 3-1/2 miles south of Hope on the Resurrection River. A 3-1/2 mile ditch delivers from 700 to 800 miner inches of water to the giants under a head of 350 feet at the present pit. From 1000 to 1500 miners inches of water is also available for ground-sluice purposes. A new ditch from Wolf Creek, which will be 2-1/2 miles long with one mile still to be completed, will practically double the ~~pressure~~ present water supply. A 4000-foot pipe line, 16 inches in diameter reducing to 11 inches, carries the water from the penstock to the present workings. Three giants are set up in the pit and one giant is set at the end of the boxes for stack-

ing the tailings. From 3 to 4 inch nozzles are used, depending on the water supply. The creek placers mined average 6 to 8 feet in depth to the bedrock of glacial clay and gravel. Most of the ground is covered with timber and 1 to 2 feet of soil. The gravel is heavy and contains some large boulders. About 10 percent of the material is too heavy to put thru the boxes, so is stacked on cleaned bedrock or removed from the pit. The gold is fine but small nuggets are common. The largest piece recovered was worth $23. It is stated that the deposit averages 40 to 50 cents per cubic yard. The grade of the creek is 100 feet per mile. Small pits 75 feet long by 150 feet wide are usually mined. The material is piped into the head of the boxes. From 36 to 40 feet of 4 foot sluice boxes, set on a grade of 7 inches to 12 feet, and equipped with rail riffles set transverse, are used. Mercury is used only in cleaning up. Usually about 8 boulders weighing from 5 to 7 tons each are encountered in each pit. These are "bulldozed" to facilitate their handling. An old steam shovel, now operated by water power and converted into a derrick with a 48-foot boom, was tried out this season for handling boulders. A home made device similar to a mechanical hay fork with heavy steel arms is dropped by cable from the end of the revolving boom. In tightening the cable the arms close, grabbing the boulder, which is then lifted out of the pit.

It is reported that its operation has not been successful. Under average conditions about 3 pits or about 6000 cubic yards of gravel are mined per month for a hydraulicking season of 3 to 4 months. A full crew of 3 shifts consists of 12 men. During August, the usual low water period, the field and stacker giant can only be operated alternately. Average costs are now about 25 cents per cubic yard, although in 1913 the same work, including all cost of deadwork, is stated to have been 14 cents per cubic yard.

KA 95-118 The Babe Mining Co. hydraulicked an old channel on the right limit of Bear Creek, 3 miles up from Hope. This channel was discovered in 1924 and prospecting shows it to be confined between two defined rims located 40 feet above the present creek level, for a distance of about 1500 feet. Its maximum depth is 35 to 40 feet, the upper 25 feet being a clayey wash - possibly glacial - with the underlying wash gravel averaging 15 feet in depth. The channel has steeply pitching rims and averages about 35 feet in width at the bottom. The gold is all coarse, being mostly on the slate-graywacke bedrock and in the lower gravel. The gravel is heavy, containing many boulders. The upper gravels are first stripped with the giants and dumped into the creek, after which the boxes are set and the pay gravel is piped in. No stacking of tailings is required. To remove boulders, a chain is fastened around them and with a cable operating

thru a block on a small gin pole, are dragged to one side. The motive power is supplied by a 35 inch Pelton wheel which operates a small hoist. Boulders up to 6 and 7 tons in weight are easily handled in this way. Chas. Mehe mined with a small hose outfit on Bear Creek about 1/2 mile above the Babe Mining Co. and Tolson and Taylor conducted a small hydraulic operation 2 miles above, at the same time stripping a small quartz vein which crosses the Creek at this point.

Sunrise District

KA95-102 This district is the most active of any in the region. M. Connolly conducted small hydraulic operations on the promising old channel on the left limit bench of Six Mile Creek about one mile above Sunrise. Oscar Plowman was sniping the bar placer on Six Mile Creek at the mouth of Alder Creek and Jno. M. Brown was doing similar mining a short ways above. Herman Lutsch did a little hydraulicking on the benches of Gulch Creek.

KA95-141 The largest and most interesting operation is that of the Canyon Creek Dev. Co. on Canyon Creek, 9 miles upstream from Sunrise. This company started its extensive development program six years ago, and while inactive last year, resumed again this season. Four miles of ditch and two pipelines 2000 and 3000 feet long, supply from 2000 to 3000 miners inches of water under high pressure. One of these

lines is 24 to 14 inches in diameter, the other 17 to 14 inches. The plan of development consists of the construction of a high timber crib and hydraulic filled dam in the narrow rock rim canyon of Canyon Creek, for diverting the water thru an old channel deposit on the left limit of the creek which will permit the mining of the creek placers below and at the same time the diverted water will groundsluice another old channel further down the Creek, which will be later hydraulicked.

No work was done on the dam this season or last, but it will be completed next year. It is of timber crib construction and hydraulic filled with a clayey glacial wash which sets like cement. White hemlock timbers spaced 10 feet apart, notched and spiked together and all well braced and keyed are used for the crib work. The dam is now 60 feet high, and when completed the height will be 110 feet or 90 feet to the spillways. It is 45 feet long and 135 feet thick at the bottom and will be 135 feet long and 40 feet thick at the top. A spillway will be blasted out of the solid rock walls of the right limit of the Canyon. The water diverted by the dam will be taken off on the left limit thru an old gravel filled channel 1700 feet long, which is now being hydraulicked, then passed thru 2000 feet of 16 foot flume and used to groundsluice away the deep overburden of the lower old channel to prepare it for

subsequent hydraulicking while the Creek placer is being mined.

The present operations are restricted to piping out the upper old channel mentioned. This old channel contains a stream sorted tightly packed heavy gravel confined within its narrow slate graywacke rimmed walls. It contains a small amount of gold. It averages about 30 feet across at the bottom and is covered with a deep overburden of glacial material 5 to 25 feet of which is a cemented blue clay and fine gravel. In places the glacier action was gauged deeply into the underlying stream gravel. This cemented material on caving comes down in enormous blocks which the giant cannot cut, and must be blasted to bits before it can be piped into the boxes. The cut is being piped out for a width of 150 to 200 feet across the top to keep the sides from sloughing. The depth of the deposit from the surface to the bedrock floor ranges from 100 to 140 feet. A No.7 giant with 6-inch nozzle operating under heads from 325 to 375 feet is used for hydraulicking. The cemented material encountered has greatly handicapped the work so that several more seasons may be required to complete the hydraulicking of this diversion channel. Six men were employed earlier in the season on this work, the crew being increased later on to twelve. Labor is paid $5, and pipemen $6, for 8

hours, with board furnished.

The lower channel is one mile long, being 91 feet in maximum depth. It is 50 to 70 feet wide at the bottom and about 150 feet wide at the top. At the lower end the bedrock floor has only a few feet of elevation about the Creek level. Several drill holes have been put down and a satisfactory gold content is claimed. The Creek placer from the dam down to the junction of Canyon Creek with Six Mile Creek, a distance of 1-1/2 miles, ranges from 7 to 12 feet in depth and contains a medium sized gravel reported to carry high gold values.

This is probably the most interesting and extensive hydraulic mining development now under way in Alaska. It will probably be 1928 before active mining will be started.

K+95-141 Tom Allison hydraulicked on the right limit benches of Canyon Creek on the Weible ground and Joe Wilson and two sons hydraulicked the benches on the left limit below Mills Creek, formerly the Renner ground. K+95-139 Bob Michaelson was groundsluicing on Mills Creek below the junction with Juneau Creek where he is opening up a presumably old channel on the right limit bench. Fred Matz shovelled-in on Mills Creek just above the Canyon.

Girdwood District

K+95-67 Erickson, Totland and Johnson hydraulicked on Crow

Creek, only the three being engaged in the work. Jno. Holmgren and Erickson will mine on this property next season. Axel Lindblad groundsluiced on Winner Creek and at the mouth of Crow Creek. The Girdwood property located seven miles from Girdwood at the head of Crow Creek is still idle, having been shut down after a few seasons of hydraulicking prior to 1907, because of other operations being conducted lower on the Creek. This lake bed deposit occupies a basin of about 200 acres. The deposit is deep, one drill hole near the center going 95 feet to bedrock. There are an unusually large number of big boulders present. These have handicapped drilling, although a very satisfactory gold content is claimed to have been encountered in the few holes drilled and from the comparatively small yardage mined years ago.

Talkeetna Region

Fairview District

The Fairview district lies about 25 miles to the west and south of the Cache Creek district and is best reached by small boat from Anchorage going to Susitna Station, a distance of about 50 miles, thence up the Susitna and Yentna Rivers, a distance of 85 miles, to the mouth of the Clearwater Creek. From here a rough foot trail follows along the Clearwater and crosses the divide into the Mills

Creek watershed. This distance to the head of Twin Creek is about 16 miles and to the junction of Twin and Mills Creek, about 4 miles farther. The district can be reached via Cache Creek but this route is advisable only in an emergency during the open season because of difficult travelling and dangerous river crossings. The small amount of supplies taken into the district are, however, freighted during the winter from Talkeetna on the Alaska Railroad via Cache Creek, a distance by winter trail of about 50 to 60 miles.

The Alaska Road Commission plans to construct a suitable pack trail next season from the mouth of the Clearwater into the district and with this route established, supplies could be taken in this way at a reasonable cost. No difficulty would be encountered during the greater part of the open season in transporting heavy machinery up the river to this point, using small shallow draught boats and scows, freighting it from there to the district during the winter.

Gold was first discovered in the district in 1906, a year after the discovery at Cache Creek, and while gold was found to be of widespread occurrence, mining has been restricted principally to the Mills Creek area. Wagner and Chicago Gulch, small tributaries at the head of Mills Creek, and Boulder and John Creeks, tributaries of Twin Creek, were the only places where gold in payable quantities was found prior to 1911. These are all short, narrow gulches with steep

gradients and were soon mined out by groundsluicing and shovel-in methods. The many other gulches nearby were all well prospected prior to 1911, but no pay gravels of consequence were found. With the depletion of these gulches, gold was later found lower down on Twin and Mills Creek and two years ago pay gravel was discovered on Pass Creek. It is on these creeks that most of the present mining is being conducted. The streams between Mills Creek and the Kahiltna River, such as Camp, Sunflower and the Lake Creek basins have been prospected, and while gold has been found in small quantities on all of them, its distribution has been too widespread over their broad valleys to make commercial placer. Considerable fine gold has been recovered from the bars of Lake Creek and the Kahiltna River, but such occurrences have been proved to be erratic and of very small extent. The Kahiltna River is a glacial stream.

All of the mining operations are conducted above timber line and at elevations where the water supply is small and limited to a few months use during the season, being supplied mainly by melting snows and rainfall. This precludes any opportunity for hydraulic mining in the district except possibly on a very small scale. Splendid spruce timber in large quantities is obtainable below timber line, particularly on lower Mills, Camp and other main creeks. The occurrence of lignite coal is common. On Camp Creek about

1/2 mile above the mouth of Cottonwood Creek, a firm, woody lignite outcrops along the right limit in a bluff about 40 feet high, for a distance of about 500 feet. A 20-foot thickness is exposed above the creek level, the foot wall being well below the water. The bed dips S.E. about 15 degrees. A sample of this outcropping lignite analyzed at the Bureau of Mines at Anchorage shows it to compare very favorably with the Healy River lignite.

The geological report made in 1913 by S. R. Capps[3]

(3) Capps, S.R., The Yentna district, U.S.Geol. Survey, Bull. 534, 1913.

of the U. S. Geological Survey describes the geology and early mining of the district in detail.

Glaciers at one time eroded the formation, consisting of the Tertiary gravels, the Eocene coal bearing formation underlying them in the geological series, ~~and~~ with the slate-graywacke series, beneath. In the Mills Creek basin the slate-graywacke series is exposed only at a few places and while this formation may have contributed some gold to the present placers, the main source can be attributed chiefly to the Tertiary gravels, and possibly some glacial material, which the present streams have eroded and concentrated. As only a few of the tributaries in the Mills Creek basin contained gold in any appreciable quantity, it is indicated that the original gold content of the Tertiary gravels does not have

a general or regular distribution but is more or less confined to definite areas cut by these streams and not reached by others. It is also possible that some of this gold has been derived by direct erosion of the slate-graywacke formation containing certain defined mineralized strata, the existence of which, however, has so far not been proven. The slate-graywacke series is exposed between Cottonwood and Pass Creeks and a large area occurs in the northern part of the district, but the gold in Pass and Cottonwood Creeks as well as Wolverine and Clearwater Creeks, has been derived from a similar source as that in the Mills Creek basin. The gold found in the upper reaches or gulches is coarse and well worn, becoming fine and flattened further downstream. Except for seasonal frost all the ground in the district is unfrozen.

The district has produced about $35,000 or so to date according to a rough estimate, and the production for 1925 did not exceed $2500. From 1911 until recently but ten or twelve prospectors remained in the entire district. A little new interest was aroused in 1924 and 1925 so that in 1925 about twenty miners and prospectors were there. Four groundsluicing and shovel-in operations were conducted with six men engaged, while the others were engaged in prospecting.

Pat Collins on Notobac Creek, an upper tributary of

YA-15-47

Twin Creek, groundsluiced and shoveled-in. The ground averages 9 feet in depth with a pay streak 30 to 60 feet wide. Up to 5 feet of upper gravel is groundsluiced off during the spring, boxes are then set on a 6-inch grade which is all the creek will afford, and the gravel groundsluiced down as far as conditions permit. Usually 2 to 3 feet of gravel and 6 inches of soft clayey conglomerate bedrock is then shoveled-in. The gravel is of medium size with but few large boulders. The gold is fine but pieces from 50 cents to $2.00 have been recovered. From 4000 to 5000 square feet of bedrock are mined during an average season, the average gold content of the ground being 12 to 16 cents per square foot.

KA 75-55 Matt Hugar mined by similar methods on Mills Creek between Wagner and Chicago Gulch, in ground averaging 12 feet in depth. Pomeroy and Kortka used similar methods in sniping some small remaining areas on the lower end of Chicago Gulch.

KA 75-53 B. A. Grier and one man prospected at the junction of Twin and Mills Creek to ascertain the dredging possibilities of this area. The Mills Creek valley at this point ranges from 600 to 800 feet in width and continues so for a mile or two below. Above the junction the valley of Mills Creek ranges from 400 to 600 feet in width for about 2-1/2 miles, and Twin Creek valley for a similar distance has about the

same width with some local flats widening to 800 to 1000 feet. As far as could be judged at the time the property was visited early in the spring, there apeared appeared to be no physical conditions that would handicap dredging. The stream gradient ranges from 1-1/2 to about 2-1/2 percent, and there were no indications that the creeks have ever experienced high flood conditions. Some bouldders are present, but were not noticeable in quantities or size that would be of serious consideration. Mr. Crier reports that during the summer a 400-foot bedrock drain was run from Mills to Twin Creek and from each end of this drain three shafts were sunk to prospect the intervening ground to the respective sides of the valley. Encouraging quantities of fine and flattened but quite heavy gold were recovered from this drain and these shafts, showing an evenly distributed gold content. The depth of the ground prospected showed an average of 10 to 12 feet.

A-15-5Y Frank Ervin and son groundsluiced and shoveled-in on Pass Creek. Gold was discovered on this creek several years ago. The creek occupies a narrow valley about 3 miles long. This creek was not visited but the placer is stated to average about 5 feet in depth and gold values considerably higher than the ground now mined elsewhere in the district are claimed for it. It is reported that a small water supply can be made available for hydraulicking and a small

plant is under consideration. Lincks and Griffiths were prospecting on Cottonwood Creek and later were on one of the gulches at the upper end of Mills Creek. Other prospectors were on Little Skookum, Wolverine, Clearwater, Home, Camp, Lake and other creeks.

Cache Creek District

The Cache Creek district has experienced a very favorable season and the placer gold output for the year should be considerably larger than in 1924. Not only were the water conditions favorable but in general the ground mined yielded larger returns. Nine hydraulic operations with 33 men engaged, one dredge operation with 21 men, 5 ground-sluicing operations with 10 men and several sniping operations were conducted. With the double ender and pack horse trails from Mile 23 on the Talkeetna to Peters Creek road, completed this fall by the Alaska Road Commission, one going up Peters Creek to upper Peters Creek, the other to Cache Creek, the accessibility and transportation facilities are greatly improved.

K+15-CC The main producer of the district is the Cache Creek dredge which was operated under lease this season by the Thos. D. Harris Co. A very successful season was experienced. The dredge started the season on May 23 and dug an exceptionally large yardage at a lower cost. But two men

were employed per 8-hour shift on the dredge.

KA 75-21 Joe Anderson with 9 men hydraulicked on Falls Creek under similar conditions as in the past, until towards fall when the new ditch bringing water from the Forks on Upper Falls Creek was completed and hydraulicking was resumed with this new supply which affords a head of 225 feet. The old supply had been reduced to a 90-foot head. The change has greatly speeded up the operation and favorable cleanups were made. A hoist operated by water pressure has also been installed for handling boulders with a stone boat. Hugh Price hydraulicked on the benches of Short Creek. Joe Krummenaker prospected on the benches of Windy Creek in search of a high channel. The Dollar Creek property was idle, having been sold to creditors during the summer.

KA 75-59 Al Wolf, with 3 men, hydraulicked on the right limit bench of Thunder Creek two miles up from its mouth. This ground averages 5 feet deep. When visited a successful season was indicated.

KA 75-64 J. Murray with six men had one of his best seasons, hydraulicking the left limit benches on Nugget Creek, the ground averaging 5 feet deep. The average pit mined is about 60 feet wide and 100 feet long. Using a 3-inch nozzle in the field, and a similar one for stacking, under ahead of 180 feet, the material is piped into the head of

a short string of sluice boxes. A pit is mined in 5 to 7 days when a full supply of water is available. Most of the ground mined this season required little if any stacking of tailings, some natural dumproom being available. As a result a much larger area of ground was mined than last year, when fourteen average sized pits were mined in the creek. The season's hydraulicking this year started May 25. Balabanoff and Charnoff groundsluiced on upper Nugget Creek. J.McAllister was sniping with a rocker on Cache Creek and Dick O'Rork and one man hydraulicked on upper Cache Creek.

KK 15-67 On the Peters Creek side, Wm. Pinee and two men hydraulicked on the old Harper ground just below the Upper Canyon, and Chris. Hammersmith KK 15-64 conducted his usual ground-sluicing operations on the benches of Bird Creek, KK 15-13 Cast and Mack had a good season hydraulicking on Poorman Creek, as did Frank Jenkins KK 15-71 on Willow Creek just above the canyon, where he mined light gravel averaging 5 feet in depth. Cooper and Holbin on the left limit bench of Willow Creek below the canyon did well with a small hose outfit. They have purchased the hydraulic outfit on Ramsdyke Creek and will move it to their property this winter. They also plan to construct a ditch to bring water from Rams dyke Creek, and expect to be ready to hydraulic next season. The operations on Poorman and Willow Creeks have used only the local water, which is usually a very small supply

necessitating impounding and using it in short, intermittent splashes. Dick Smith groundsluiced for a while on the benches of Peters Creek above the lower canyon, and Carlson and Weatherall hydraulicked the right limit bench of this creek at the lower end of this canyon, but ceased operation about mid-season.

An attempt to sink prospect shafts on Peters Creek early this spring about 5 miles below the lower canyon or about 3 miles above the bridge at Mile 23 failed because of an excessive flow of water encountered in the loose washed gravel. Similar difficulty had been experienced the previous year, when but one shaft out of many reached bedrock at a depth of 7 feet, near the right limit of the creek about one mile below the canyon. This ground is under option to a dredging company. The owners of the ground were, however, successful in reaching bedrock near this locality, with one shaft near the right limit which reached bedrock at 8-1/2 feet and one near the left limit at 7 feet, and report a gold content of 68 cents and 44 cents per cubic yard respectively. Very good prospects are also reported from those shafts not reaching bedrock. The gold is fine, ranging up to pieces worth about 5 cents, and has been derived mainly from the reconcentration of glacial material and the Tertiary gravels, and probably to some extent through the stream erosion of the slate-graywacke series, thru which Peters Creek has cut its

channel. For a distance of about 1/4 mile below the canyon, boulders are encountered, but for a distance of 5 miles downstream the gravels are of medium size, and while some heavy rocks are present, prospecting so far has not shown any that would be a handicap in dredging. Large boulders do, however, show up in the creek bed about 5 or 6 miles below the canyon. The valley ranges from 800 to 1000 feet in width, the creek gradient is low. Systematic drilling will be necessary to determine the dredging possibilities of this creek.

Kantishna District

Placer mining in the Kantishna district is characterized by the large number - twenty-five - of ground-sluicing and shovel-in operations with but one or two men engaged at each. Sixteen of these operations engaging 19 men used automatic gates, while nine employed the usual groundsluicing methods engaging 11 men. One hydraulic plant was operated for part of the season by Wm. Taylor & Co. on the benches of Caribou Creek on the property of the Mt. McKinley Gold Placers, Inc., four men being engaged. The greater number of these operations were conducted on Glenn, Eureka and Glacier Creeks, with one operation on each of the following; Eldorado, Yellow, Rainy, Caribou and Crevice Creek. On the Toklat side, 2 operations were conducted on Little Moose Creek and 3 on Crooked Creek.

K+66-14

Crooked Creek, a tributary of the Toklat, was the scene of a small stampede last year when gold was discovered on the benches there.

Bonnifield District

Two hydraulic operations engaging 11 men and 6 groundsluicing and shovel-in operations with 12 men were conducted during the season in the Bonnifield district.

The Gold King (AK 58-206) Hydraulic Mining Co. with 8 men hydraulicked on Gold King Creek during the early part of the season in creek ground averaging 6 to 7 feet in depth. Pat Britt with one man groundsluiced on Bonnifield Creek and Elmer Gustaveson with 3 men mined with an automatic dam on Grubstake Creek. Fred Rowe with 2 men hydraulicked on Platte Creek on the property mined by Val Diebold two years ago. Otto (AK 58-169) Dienfelder mined on Daniels Creeks using an automatic gate and E.M.Keys (AK 58-173) mined by the same method on Moose Creek, a tributary of the Nenana River. Zeilks also did similar mining on the Creek and one man groundsluiced on Rex Creek. Dredging interests acquired an option on Moose Creek about mid-season and prospected the ground.

Yukon Basin

Forty Mile District

Placer mining in the Forty Mile district remained about the same as reported last season, although new develop-

ment underway indicates improvement for the future. A large number of one and two men operations were conducted on the various creeks of the district, using groundsluicing and shovel-in methods with several using hose outfits for hydraulicking, while others conducted drift mining. The largest mining operation was conducted on the Dome Creek benches where Lee Steele (KX 60-126) operated the hydraulic plant which last season was operated by the Dome Gold Corporation. Ditch construction and other development is reported as still underway on Walker's Fork where H. D.Cowden has a crew of about 10 men employed. The A.A.McCandless (KX 60-125) plant on Jack Wade Creek is reported to have been idle. Ingle Creek and Mosquito Fork are to be prospected by Lee Steele, who has recently organized the Ingle Creek (KX 60-119) Gold Mining Co. A Keystone drill is reported to have been shipped to this property last spring and the dredging and hydraulicking possibilities of this area are to be investigated.

Eagle-Seventy Mile District

(KX 60-54) Seven men were engaged in placer mining in the Eagle district on American Creek and Discovery Fork, J.J. Samis conducted two operations using an automatic gate and shoveling in, and Ed Olson, F.E.Omo and Gus Fritch each did similar mining.

Operations in the Seventy Mile area were about the same as reported last season, about 25 men being engaged in

mining. Froelich, Kummer and Ott, on Crooked Creek, C.A.Bryant on Alder Creek; Carlson and Nelson on Broken Neck, hydraulicked and were the principal operations. Small operations were conducted on Fox, Barney, Nugget and Flume Creeks, and on the Seventy Mile River. The July Creek Placer Co. operated its hydraulic plant on Fourth of July Creek with a crew of about 9 men and two small drifting operations were conducted lower down on this creek.

Circle District

The Circle district has experienced a better season than last year because of a generally increased water supply. About 100 men were engaged in placer mining and prospecting in the Circle district. The usual small drift, open cut and prospecting operations were conducted in the Woodchopper area on Sam, Coal, Woodchopper Creeks and Charley River. Coal Creek is being prospected by C. Ellinger, a dredging operation being considered for this Creek. The principal operation on Deadwood Creek was that of Iverson, Knutsen and Fursath, who hydraulicked the creek placer, 5 men being engaged. Langlow and Larsen hydraulicked on Switch Creek. The principal operations around Miller House were conducted by the Berry dredge on Mammouth Creek, the C.J.Berry hydraulic operation on Eagle Creek and Jack Anderson who hydraulicked on Mastodon. The dredge and the Eagle Creek operations

report very successful seasons. Smaller hydraulic operations were conducted on Miller, Bonanza and Birch Creeks.

Fairbanks District

Placer mining in the Fairbanks District in 1925 showed a considerable decrease in the number of operations and the number of men engaged and placer gold output for the year is estimated to be less than in 1924. This can be attributed to the activities of dredging interests in that district who have either purchased or have under option, the principal claims on the creeks so that operations formerly conducted there have been brought to a close. There were 43 summer mines with 227 men engaged and 13 winter drift mines with 64 men, operated during the year. Six of these drift mines engaging 35 men continued on as summer operations. The summer mining was conducted by three dredges employing 39 men; 9 hydraulic plants with 45 men; 2 Bagley scraper operations with 27 men; and 10 groundsluicing or other open cut operations with 13 men.

Drift mining was conducted mainly on Little Eldorado and Fairbanks Creeks, although also to a lesser extent on Ester, Big Eldorado, Smallwood, Engineer, Vault and Dome Creeks and at Chatanika. KH 49-191 Four drift mines were operated on Little Eldorado Creek, chief among which were the

operations of the Oregon Mining Co. on the Oregon Assn., with a maximum crew of 17 men, and Hansen and Lotti on No. 2 above with 10 men. The method of operation on the Oregon Assn. claim has been described in detail in previous reports under the operations of the Idaho Mining and Leasing Co. The company was reorganized late in 1924, operations being resumed this spring by the present company, using the same method of drilling and blasting down the frozen ground but shovelling the broken material into cars. The duty per shoveller dropping to 12 square feet per shift and the difficulty to obtain good men and retain them is given as the reason for later resuming the use of the scraper operated by air hoist for loading the cars according to last year's practice. The new management has encountered difficulties in blasting down the gravel in that many of the shots do not break to the bottom, leaving the face too irregular for good scraper practice and much of the gravel often breaks down in large chunks. To some extent this is due to some change in the character of the gravel but probably mostly to the pointing and shooting of the holes. Gas troubles have been practically overcome by using 40 percent gelatin. The cost of the explosives this season is stated to be about 23 cents per square foot of bedrock with gelatin costing $11.10 per box

at the mine. The cost of explosives last year at the time (Sept. 17) the operation was visited by the writer was stated to be 10 cents per square foot of bedrock. After the close of last season's operation 28,000 square feet had been mined and a check-up of the explosives showed this cost to be 17-1/2 cents per square foot. It has been found that considerable more powder is required in driving cross cuts than along the working face. This season many cross cuts were driven, accounting in part for the exceptionally high cost of explosives. About 15,000 square feet of bedrock was mined this season. The principal drifting operations conducted on Fairbanks Creek were those of Gather & Co., on No. 12 below, who operated both summer and winter with 4 to 7 men engaged. Toole and Hagan with 6 men on No. 8 below and Kinney and Gillis with 6 men on No. 2 below did winter mining only. At the Gather operation a light 3-cubic-feet scraper, equipped with handles at the back for controlling it, was used for a while for scraping the gravel to the car in the main drift, after it has been thawed and picked down by the usual methods. This scraper was operated by a small single drum hoist installed at the surface and controlled by wires leading from the working face to the hoist. Three men by undercutting and picking down the thawed gravel

and soft bedrock for one hour supplied material to keep the scraper busy for two hours. One man then handled the hoist, one attended to the scraper, while the third did the tramming. With every thing running smoothly as high as 480 wheelbarrows of material was hoisted some days, which was about 35 per-cent more than was averaged by the old method of shoveling and wheeling. While the equipment was a make-shift, and the paystreak was found to be too irregular to permit a long enough working face to justify further use of the scraper, the operators were well pleased with the results and plan to use the same method on a new block of ground to be developed this winter. Poole and Hagan will conduct experiments in drilling, blasting, and scraping the frozen gravels this winter on No. 18 below, using hydraulic methods for sluicing the dump in the spring. The hydraulicking into the boxes of the broken material will assure its complete thawing and disintegration. Other drift operations are planned on Fairbanks Creek this winter. The principal drifting operations on Ester Creek were conducted this summer by Peterson & Co. on No. 9 below with a maximum crew of 18 men. This operation has now shut down for good. Henry Benson with four men drifted on Cold Hill. Blake and Hilty, with a crew of 7 men drifted on the Steer claim during the summer and Freeman & Co. with 5 men did winter drifting, these being

the principal drifting operations around Chatanika. Bjoberg and Overman with 5 men drifted on Engineer Creek this summer.

[4-44-125] Both dredges of the Fairbanks Gold Dredging Co. have been operating well all season and the clean-ups have been larger than usual. No. 1 dredge started the season on June 2, No. 2 starting June 26. Twenty-eight men are employed by the company, 3 being engaged on the ditch, 4 on the thawing and 2 on the tractors, the rest being directly concerned with the operation of the dredges. Thawing with water at natural temperature was done ahead of the No. 1 dredge. An average of 120 points consisting of 1/2-inch pipe with open ends (sweaters) are easily driven to bedrock, the ground here averaging 20 to 25 feet deep. Ditch water under 40 foot head is used for these points. The limited supply of ditch water available caused the company to install a small pumping plant this season consisting of a 13 H.P. Scandia semi diesel engine and a 6-inch Morris sand pump which supplies water to 30 additional points. The ditch water is warmer than the pumped water. Points are spaced at 5 foot centers. The time required for a thaw is most variable.

[4-44-50] The small dredge of the Chatham Gold Dredging Co. on Cleary Creek operated all season digging to the mouth of Chatham Creek. This dredge was originally intended for Chatham Creek and in the future will be digging up this Creek.

CORRECTION TO

REPORT ON "PLACER MINING IN ALASKA IN 1925"

By
N.L.Wimmler.

The data given on pages 57 and 58 of this report concerning the dredge of the Tanana Valley Gold Dredging Co. Ltd., on Fish Creek as obtained in 1925 from Geo. Lemons, at that time the manager, has, upon investigation in 1926, been found to be quite incorrect.

A complete and correct statement will be given in the 1926 report so please have all data given in the 1925 report striken out and the following inserted instead.

IC-449-83

The Tanana Valley Gold Dredging Co. Ltd., was engaged in the erection of its dredge on Fish Creek. The hull was launched August 28 but the dredge was not completed before the close of the season. This dredge was constructed by the Yuba Mfg. Co. and is of the stacker and revolving screen type and as now being erected will dig to a depth of 40 feet below water level. There are 84- 5 cubic foot buckets in the close connected line, four of these being of special design, having deep segments cut out of them so as to provide three long prongs or points. The manager contends these will be of great service in loosening the gravel and for digging bedrock, whereby the regular buckets will be able to dig a full load. Two 150 H.P. boilers installed aboard the dredge will deliver steam to the 300 K.W. steam turbine direct connected to the turbo- generator. Coal will be used for fuel, which will be hauled 14 miles from the nearest railrod station- Gilmore. The estimated daily digging capacity of the dredge is about 4000 cubic yards.

The placer on Fish Creek above its junction with Fairbanks Creek varies from 18 to 50 feet in depth. Beyond the banks of the creek proper, the gravel is overlain by frozen muck. Naturally thawed channels and patches have developed, although most of the gravels are frozen. These interests also hold options on ground on Engineer Creek.

which averages 13 to 16 feet in depth. The dredge was operated its first season in 1934 when it was driven by gasoline power but was under powered. Early this spring, the hull was lengthened 6 feet and a 60 H.P. boiler was installed. An 8 x 10 single cylinder steam engine now operates the sluice pump, a 10 x 12 engine operates the bucket line and winches, and a 7 x 9 engine operates the 6-inch sand pump. An undercurrent 4 feet wide and 20 feet long, paved with cocoa matting and covered with expanded metal, has been added, receiving the fines which pass through the grizzly placed in the bottom of the flume at its lower end. This undercurrent has saved on an average of $150 in fine gold every 10 days. The sand pump pumps the fines from the sump at the end of the undercurrent and deposits it beyond the end of the flume. The changes made have increased the average daily digging capacity by 100 cubic yards, it now being 1000 cubic yards per day. Five tons of Healy mine run coal, costing $10 per ton, landed at the dredge, are burned per day, which with the labor and board cost of an engineer and fireman amounts to $85 per day or 8-1/2 cents per cubic yard dredged. The labor employed on the dredge amounts to the same cost as it did last year when gasoline power was used, so that the main increase in cost of the steam power is that of fuel which is $12.50 per day more.

This is compensated to a large degree in the increased digging capacity and the use of steam during the freezing weather. Nearly 3,000 ton coal costing $1.50 less per ton is being given a test.

The hydraulic mining in the Fairbanks district was conducted at the two plants on Pedro, one on Twin Creek, two plants on tributaries of the Chena River, one plant on Homestake Creek, one on Last Chance Creek and two small operations on Gilmore Creek. A Zimmerman & Co. operated one plant on Pedro Creek and another on Twin Creek, 8 men being engaged at each operation. The ground mined at each operation averages about 15 feet in depth. The method of piping into the head of 4 to 5 lengths of sluice boxes and stacking the tailings with a Hanot cableway excavator is used at both places. A water shortage necessitates using it in short intermittent splashes so that the excavator which is operated by steam permits all the water to be used for piping in. The company expected to mine 40,000 square feet on Pedro and about 30,000 square feet on Twin Creek this season and was laying plans to mine about 120,000 square feet per season with the two plants in the future. Cain & Co. with a crew of ten men hydraulicked on lower Pedro Creek first stripping off 4 to 6 feet of moss, muck and top gravel, then setting 6 boxes and piping in the

remaining 6 to 8 feet of creek bay gravel. Tailings are stacked with a plant. About 65,000 square feet of bedrock were mined this season.

A. McIntosh Co. hydraulicked with a crew of 5 men on Palmer Creek, a tributary of the Chena River and Joe Chesna & Co. with 5 men hydraulicked on Shamrock Creek. Miller & Co. with 4 men operated their hydraulic plant on Homestake Creek, a tributary of Faith Creek and Jackson & Wickander conducted small hydraulic operation on East Chance Creek, a tributary of Fish Creek. K-58-49

Dredging development on Goldstream Creek has brought to a close most of the large Bagley scraper operations formerly so typical of the placer mining on this creek. The only operations of this kind conducted in the district this season were those of F. Bleecker on No. 10 below Goldstream Creek who with a crew of four men early in the season completed the scraping of a small incompleted cut of the previous season, and those of the Fairbanks Exploration Co. on No. 6 and 7 below, Goldstream Creek. This company operated two Bagley scraper plants on the former Wagner ground, completing two large cuts in an area lying beyond the limits that will later be dredged. F. Bleecker plans to resume his operations next season on No. 11 below and it is reported that the Manot operations on Discovery Goldstream K-58-266

may also resume next year.

The prospecting of dredgeable ground by shaft sinking and drilling, ditch construction and other developments for dredging were exceptionally active during 1935. The number of men engaged in such work fluctuated greatly, but during the summer ranged from about 300 to a maximum of 500. This placer development has now reached a point where the district is assured of large dredging operations which will extend over a period of many years.

K+ 58-44
58-51

The Fairbanks Exploration Co. stands foremost in the field. During 1935 this company had from 250 to over 400 men engaged in the systematic drilling and investigation of the placer resources and water supply, ditch construction, experimental stripping of overburden, research work, surveying, building construction, etc., the July payroll including a maximum number of 436 men.- This company operated ten churn drills, drilling on Pedro, St. Patrick, Goldstream, Dome, Little Eldorado and other Creeks and last winter did some hand drilling on upper Chena River and tributaries. A resurvey was made of the Davidson ditch which is to bring water from the Chatanika River below the junction of Faith and Manus Creek to Cleary and Goldstream Creeks and those lying between for stripping and thawing purposes. The resurvey shows that this ditch will be 75 miles long from

the intake to Goldstream Creek at Fox, with 4 miles on Goldstream, and includes about 48,000 feet of 4-foot syphons and about a mile tunnel through the hill between Dome and Goldstream Creeks. The construction of this ditch, also known as the 79 mile ditch, will no doubt be started next spring, although this will not be decided until this winter. Besides supplying water for stripping and thawing ahead of dredging, it will later be available for the hydraulicking of much placer ground in that area which is not dredgeable because of its position and other physical conditions and which could otherwise probably not be profitable or extensively mined, thereby adding greatly to the future placer life and gold production of the district. The construction of the 12 mile ditch, bringing water from the Chatanika River, a short distance above Kokomo Creek to No. 9 below, claim on Cleary Creek, was started and practically completed. This ditch, 12 miles long, will have a carrying capacity of 3000 miners inches and follows down the left limit of Chatanika River. It has a grade of 3.6 feet per mile. Graders drawn by tractors were used to level the ground to the cut, the cut being made by steam shovel. Two steam shovels were used and a crew of 90 men were engaged on this work. Several stretches of frozen ground along steep side hills were encountered where steam thawing points were

used for thawing holes which were loaded with powder and blasted. Construction at these places required much hand work. Old ditches on Goldstream and Cleary Creek were rehabilitated and a short ditch was constructed on Cleary Creek to bring the local water from No. 3 below to the lower end of the Creek where a 175-foot head is obtained. About 20 men were engaged on lower Goldstream Creek in stripping the moss with tractor and grader and by hydraulic methods, and hydraulicking the muck overburden. The small local water supply from the Peterson ditch was used through a 3-inch nozzle under about a 75-foot head. The main pipe line runs down the center of the area from which lateral lines running at right angles conduct the water to the different giants. With the present average water supply one giant is operated at a time. This limits the work to a small scale but was done mainly for experimental purposes, the results of which have been very satisfactory. An office, garage, and heating and lighting plant are under construction on the outskirts of Fairbanks. It will probably be 1929 beforeany dredges will be operated.

KK 59-23 The Goldfields American Dev. Co. put down prospect shafts and drilled on the South Fork of Beaver Creek, French and Alaska Creeks, tributaries of the Chena River, during several months early in the year. This company also

operated 3 Keystone drills on Slater Creek from February to the latter part of June and had 2 drills at work to prospect the Salchaket River and its tributaries Caribou and Butte Creek. This latter work had hardly started when in the latter part of June, all of the work of this company was suspended and its engineers returned to London.

KA 44-93 The Tanana Valley Gold Dredging Co. Ltd. was engaged in the erection of its dredge on Fish Creek. The hull of the dredge was launched August 28 but the dredge was not completed before the close of the season. This dredge was constructed by the Yuba Mfg. Co. and is of the stacker type and as now being erected will dig 45 feet below water level. There are 88 six-cubic-foot buckets in the close connected line, four of these buckets being of special construction having deep segments cut out of them so as to make three long prongs. The designer contends these will be of great help in loosening the gravel and digging bedrock, whereby the regular buckets will be able to dig a full load. The hull is 45 feet wide, 112 feet long and 9 feet deep and is very staunchly constructed. Two 250 H.P. boilers installed aboard will deliver steam to the turbine for generating electric power. Coal will be used as fuel, which will be hauled 14 miles from the nearest railroad station - Gilmore. The stacker is 80 feet long, using a 36-inch belt. The

revolving screen is 26 feet long and 6 feet in diameter with 3/8 to 3/4 inch holes. The rated normal digging capacity of the dredge is 4000 cubic yards per day. The placer on Fish Creek above its junction with Fairbanks Creek varies from 18 to 50 feet in depth. Beyond the banks of the creek bed proper, the gravel is overlain by frozen muck. Naturally thawed channels and patches have developed, while the rest of the gravels are frozen. These interests also hold options on Engineer Creek.

Six prospectors engaged in further prospecting by shaft on Kokomo Creek last winter. The ground is deep, over 90 feet in places, and contains thawed channels. Encouraging prospects are reported, but nothing has as yet been found that would afford profitable drift mining. McCombe Bros. prospected with a hand drill on Nugget Creek, a tributary of lower Goldstream and Ed Holbrook & Co. prospected on upper Home Creek, a tributary of the Beaver, to ascertain its dredging possibilities.

Valdez Creek District

Gold was first discovered in the Valdez Creek district in 1903 and to date about $500,000 in placer gold has been produced. Three small open cut operations were conducted in 1925, employing eight men. The placer gold output for the season was about $3000.00. Soon after the

first discovery of placer in this district practically all of the gravel deposits of Valdez Creek and its tributaries, Timberline Creek, White Creek, Lucky Gulch, and Roosevelt Creek, and their tributaries, were staked and prospected and some gold was found on all of them. Gold was also found on other creeks of the district, but mining has been restricted principally to the western end of Valdez Creek, Lucky Gulch and to a less extent on White and Rusty Creek, and Timberline Creek.

Denali, the post office of the district is located on Valdez Creek, about two miles up from its junction with the Susitna River and 115 east of Cantwell, a station on the Alaska Railroad. The distance from Cantwell to the Susitna River crossing by summer pack trail or winter sled road is 55 to 60 miles. The Susitna River is a glacial stream which spreads out over a wide valley and cannot be forded by horses because of treacherous quicksands. During open season, the crossing must be made by rowboat several being available there for this purpose. The Creeks above mentioned are reached from Denali by trail, the most distant operation which is on Lucky Gulch is about 7 miles to the east while the distance to the upper reaches of Roosevelt Creek is about 12 miles. No pack train or other regular freighting service is maintained to the district, the miners taking in their own supplies and equipment.

usually during the winter months. The cost of freighting to the district is most variable, although large quantities have in the past been freighted in from Cantwell during the winter at a cost of $150.00 to $200.00 per ton. Should a reasonable amount of business again develope this freighting could probably be done at a cost not exceeding $100 per ton or five cents per pound and summer freighting for 10 to 15 cents per pound.

With the exception of a small scattered growth of spruce along the benches of lower Valdez Creek and a better growth on the Susitna River flats, the area under consideration is bare of timber. The elevation of the placers on the various creeks ranges between about 2800 to 4600 feet above sea level partly accounting for the comparatively short placer mining season which normally begins about June 15th and closes by the middle of September. The wage scale for labor is $6.00 for 10 hours plus board. A crew of 30 to 35 men has been boarded in this district for $2.25 to $2.50 per man a day.

The north side of the Valdez Creek valley is a region mainly of schist and altered intrusive diorite, while the mountains on the south side are of slates and schists with interbedded igneous flows or intrusives, intruded by diorite and related porphyritic rock. Intrusives are much less abundant on the north side and are less altered.

The geology of the district is fully described and mapped in the U. S. Geological Survey Bulletin No. 498 by Fred H. Moffit published in 1912. Prospecting of the tributaries of Valdez Creek coming in from the north has shown very little gold while those from the south cut a well mineralized formation, particularly from Timberline Creek to Roosevelt Creek, although Lucky Gulch, and to a lesser extent White Creek, have so far been the only tributaries of Valdez Creek to yield gold in commercial quantities.

AK 67-34 67-35 The Valdez Creek district has experienced heavy and extensive glaciation causing the erosion of the formation of the surrounding mountains and deeply scouring the valleys of Valdez Creek and its tributaries, destroying such placer which existed at that time, and scattering it over a large area. With the retreat of the glaciers, a deep bed of glacial material was deposited in the valleys through which the streams have cut new channels into the underlying bedrock. This unsorted glacial material contains some gold and small isolated spots may at times be found containing considerable gold, but rarely supports profitable mining. The resorting of such material by subsequent stream action, whereby large quantities are reduced to relatively small volumes, may form workable placer. Some of the preglacial placers, or those existing prior to glaciation, may have escaped its action and this fact is evidenced in the old

channel found in the bench of lower Valdez Creek and which will be later described. It is possible that other portions of this old channel may still be found elsewhere beyond the present suspected limits and portions of similar old channels but of lesser size and importance, may exist in the benches of some of the tributaries which have been the object of search but have so far not been disclosed. The deep covering of glacial material on most of the benches, the depth of the creek gravels of Valdez Creek above the canyon and of its tributaries, the generally very heavy gravel with many large boulders and the unfrozen condition of all of the ground in the district, has been a great handicap to prospecting and mining.

Valdez Creek is a clearwater stream about 14 miles long. The discovery claim is about a mile up from its mouth. Downstream from No. 9, above discovery claim, Valdez Creek has cut a deep canyon through the overlying gravel into the slates beneath to a depth of 175 feet and more, and in so doing has intersected the old gravel filled channel on No. 2 above discovery claim. This canyon is about 3 miles long and at the present Creek level ranges from 86 to 126 feet in width with some local widenings. Leaving the canyon, the valley widens out and about a mile below emerges on the flats of the Susitna River. The average grade through the canyon is 176 feet per mile. Upstream from No. 9 above

discovery claim the valley floor has several distinct widenings, attaining its greatest width above No. 15 above discovery claim where for about a mile its maximum width is about 300 feet. Its average width above the canyon is otherwise 125 to 150 feet and the average grade is about 50 feet to the mile. The creek gravels here are ~~thick~~ deep, and many large boulders are present. Bedrock has been reached only in a few instances, holes having been drilled to depths of 50 to 60 feet. One hole on the left limit on No. 25 above claim reached bedrock at 30 feet but encountered no pay gravel. Nevertheless there is probably considerable gold in this part of the Creek. The average grade of this creek for 10 miles above the western or lower end of the canyon is 100 feet to the mile. Valdez Creek affords a large steady supply of water and is available for hydraulicking on the lower part of the creek under high pressure. The local miners report that the flow below White Creek is seldom less than 5000 miners inches. Mining in the creek, especially in the canyon, is attendant to dangers from occasional high water conditions.

The mining of the creek placers of Valdez Creek was restricted almost entirely to the lower end of the creek up to No. 5 above Discovery claim. Discovery, No. 1 below, and the lower half of No. 2 above Discovery, claims were the richest, lying downstream from the old gravel filled

channel known as Tammany bench, which the present creek intersected. No. 1 above Discovery claim has been mined but very little, as it includes the narrowest and deepest part of the canyon. These claims are now covered with a deep layer of tailings from the Tammany bench workings. The original gravels as mined on those claims usually ranged from 3 to 8 feet in thickness, being 10 to 12 feet thick on No. 5 above. A great number of very large boulders were encountered. Mining was done by shovelling-in methods, diverting the Creek with wing dams and shear boards.

No mining is now being done on Valdez Creek or its benches. Drift or underground mining was conducted on the Tammany bench or the right limit prior to 1912 where 1450 feet of this old channel was mined. Hydraulic mining was then started and this portion was so mined until 1923, when it stopped where the former drifting had ceased. Drift mining was then resumed during the following winter, but very little gravel was mined. Since then this property has been idle. A little drifting had also been done in the early days on the left limit bench opposite No. 2 above in what is probably the continuation of the Tammany channel. Some partly frozen but wet ground was encountered here and other conditions were adverse to a continuance of mining at that time. A little open cut mining was also

done on the left limit bench opposite No. 1 below and while a small amount of mining was done elsewhere, it was mainly of a prospecting nature. The total gold production to date from the Tammany bench and the creek claims mentioned has been estimated at a little over $400,000.

The Tammany bench or channel and its mining is of special interest. Valdez Creek has intersected this old channel which now lies 50 feet above the present creek level. The general course of this old channel for a distance of 1350 feet from its lower end is N 28° E, magnetic bearing, then making a pronounced turn to the east. The rock rimmed walls of slate stand at a high angle. Its width at the bottom or floor is 40 to 60 feet with a widening to over 100 feet at the turn mentioned. A typical section from bedrock to the surface of the gravel is as follows: 14 to 16 feet of pay gravel containing flattened diorite with well rounded edges and rounded slate and schist; 1-1/2 to 4 feet of clay containing some fine gravel; 15 feet of loose brown gravel with very little gold; 10 to 15 feet of tight gravel containing a little fine gold; up to 13 feet of gravel containing gold in workable quantities. The thickness of this horizon averages 50 to 52 feet and is of sorted material. This is overlain by 50 to 60 feet of mixed up gravel, apparently most of it being of glacial origin. The rock rims of the channel rise to within 7 to 25 feet of the

surface of this upper material. The total thickness of the deposit is 100 to 110 feet. The average width across the cut at the surface is about 300 feet. Many large boulders are present in all of the gravel although this seems more pronounced in the upper 50 to 60 feet. The grade of the channel floor is about 3 per cent. The gold is of the "pumpkin seed" variety, being flat with round edges, and coarse, the size of most of it ranging from pieces worth 10 cents up to 50 cents. The largest piece recovered was worth $18.00.

The early drifting removed an average of 6 feet of the lower pay gravel for a width of 40 to 60 feet. It is stated that some of this yielded up to $20.00 per square foot as drifted, the average yield being $20,000 per 100 feet of channel. The ground was unfrozen and wet, requiring closely spaced and heavy square set timbering. The subsequent hydraulic operations were conducted by the Valdez Creek Placer Mining Co., later reorganized as the McKinley Gold Placers, Inc.

The property is now splendidly equipped for hydraulicking. A ditch 1-1/8 miles long with 8 to 10 foot bottom with a carrying capacity of 3400 miners inches brings the water from No. 11 above on Valdez Creek to the penstock from where a pipe line, 5000 feet long of riveted steel pipe 36 inches in diameter reducing to 18 inches, delivers it to

the top of the pit. Four inch, six inch, and one-eight inch nozzle are used under a maximum head of 300 feet.

The hydraulic methods used have been changed from time to time. A deep rock cut was blasted through the right limit rim. The upper gravels were piped off and put through sluice boxes installed in this cut and dumped into Willow Creek, a small short tributary of Valdez Creek. The lower gravels were piped down and sluiced through 5-foot boxes set in the bedrock floor of the channel on a grade of 6 inches to 12 feet and equipped with rail riffles. To obtain this grade a deep cut was blasted in bedrock. Boulders were drilled with air drills, blasted and piped into the head of the boxes. A double boom steel derrick on a revolving base was for a short time used for stacking boulders. The water of Valdez Creek was not able to keep the dump clear at the mouth of the channel, but this was later remedied, at least partly so, by installing a giant for stacking until the time of a freshet when the dump could be carried away. Since 1912, but 1450 feet of this channel has been hydraulicked. About 35 men were employed. After present financial and legal difficulties have been settled, operations will no doubt be resumed.

K467-35 A little prospecting but no mining was done on Timberline Creek until this year and that was mainly of a prospecting nature. This creek is about 3 miles long and

occupies a narrow valley. Last spring, Monohan, Olson and Colligrossi started prospecting on the right limit bench of Timberline Creek on Discovery Claim. Groundsluicing methods with pipe and hose were used in making cuts along the bench. Coarse gold was found on a high point nearest Valdez Creek and in a few days about $150 worth of coarse gold was recovered from a small cut along a high rim of bedrock. The extent of this pay was very limited and by this time worked out. Word of this reached Anchorage and soon created a small stampede into the district. Some 40 to 50 participated in this and all ground open for location was staked, including the creeks mentioned early in this report, and their tributaries. As most of the ground on the more important creeks was not open to placer location, the new staking was done mainly on upper Valdez Creek, Roosevelt Creek and its tributaries, Eldorado and Surprise Creeks, Rusty Creek, Timberline and others. This also lead to a prospecting of other creeks in the district, but no work was done on any of the newly located claims. A number of the locators, however, expressed intentions of returning next season to prospect their holdings.

Monohan and his partners have since groundsluiced out other cuts within a distance of about 300 feet southeasterly of their first one, in search of a possible old channel. Some fine gold had been recovered from these

cuts but at the time the operation was visited (September 2) no pay channel had been found. No mining has been done in the creek bed of Timberline Creek. It is stated that what little prospecting was formerly done here, failed to uncover any pay ground, although bedrock was not reached, as the gravels are deep and wet.

M61-114 White Creek is about 7 miles long and has three branches, known as Big Rusty, Little Rusty and Rusty Creeks. The creek deposits have been prospected in the past under difficult conditions of deep wet gravel and the results obtained were not encouraging. The little mining formerly done in the creek bed was in shallow gravel overlying a false bedrock of only local extent. An attempt was made to put down a drill hole some years ago in the creek bed of White Creek opposite the mouth of Rusty Creek. It reached a depth of 80 feet without encountering bedrock or pay. Most of the mining has been done on the right limit benches and has been restricted to a number of small groundsluiced cuts.

Stewart, Tronstad and Stinnes mined on No. 5 claim, right limit bench of White Creek this season and last, the ground varying from 10 to 20 feet in depth. Bedrock is a blocky schist and slate. The gravels here are tightly packed and laid down in no regular order, but are not nearly as heavy or bouldery as those on Valdez Creek. Both coarse and fine gold is recovered, which is mostly rough and bright,

although some of it is worn and some has a rusty coating. The distribution of the gold is spotty and the average of the gravels mined were low grade. A small but fairly steady water supply is obtained from White Creek and brought to the workings through a mile ditch. By ground sluicing, and using the water under low head through a 6-inch canvas hose, equipped with a small nozzle, the gravels are sluiced through short boxes. A natural dump for the tailings is available, as the benches lie 40 to 50 feet above the level of the creek. The concentrates recovered in the sluice boxes are of unusual interest, for besides containing magnetite, garnet, rutile, iron pyrite and bits of native copper and chalcopyrite, some small rounded pebbles of galena, occasional small pieces containing native bismuth and native arsenic, and a few small pieces of a blackened mineral, some portions of which have a bronze to golden tarnish or with a particle of gold adhering to it, are found. This last mentioned mineral cuts like metallic lead and has a silvery streak. It has been analyzed and assayed by Mr. Paul Hopkins of the U. S. Bureau of Mines at Fairbanks and found to be hessite, a telluride of silver. A portion taken from one of the pieces free of adhering gold was assayed and found to contain 61 percent silver and one ounce of gold per ton. An assay made of the galena pebbles consisting of grains of galena and small particles of native bismuth gave

returns of 1.90 ounces in gold and 283.60 ounces of silver per ton. No presence of tellurium was detected. These valuable concentrates are recovered only in very small quantities, particularly the hessite. Rusty Creek, a main tributary of White Creek, has been prospected at different times and some years ago a long cut was boomed out, using an automatic dam. The gravels in the bed of this creek are deep, bedrock being reached at only a few places. The gold production to date from White Creek is estimated to be about $10,000 and several hundred dollars were recovered from Rusty Creek.

K+61-21
61-38

Lucky Gulch is a steep narrow V shaped Gulch about 1 mile long. It possesses characteristics very different from any of the other placers in the district. Heading practically at the top of the divide with White Creek, where the placer ranges from 3 to 8 feet in thickness, it follows down the gulch on a grade of about 12 per cent, the thickness of the placer increasing to 20 to 30 feet at the lower end, then fanning out over the thick gravel bench of Valdez Creek. Along the right limit of the lower half of the gulch is a narrow bench deposit. The gravel in Lucky Gulch consists mainly of angular fragments of slate, and a little diorite and quartz. The wash is generally small, with practically no boulders present. Bedrock is a rough slabby

slate and schist containing small blobs of quartz, and cut by some small diorite dikes. The gold is coarse and rough. A $900.00 nugget and another worth about $600.00 were recovered some years ago. The gold has apparently been derived from the erosion of the local bedrock, probably since the time of the glacial period. The only mining conducted on the gulch this season was the small groundsluicing operation of L. B. Wickersham and partner, located well at the upper end at an elevation of about 4600 feet. Lucky Gulch has to date produced about $60,000 in placer gold but barring a little bench ground and the alluvial fan at its mouth, which has not been well prospected, it is practically mined out.

Following the placer stampede this season, a number of lode locations were made. The lode prospects of the district are described in another report.

Tanana Precinct

Included in the Tanana mining precinct are the Salchaket, Delta and Richardson districts, drained by streams emptying into the upper Tanana River. Placer mining has been conducted in all of these districts for many years, mainly in the Richardson or Tenderfoot district. Very little mining was done during this season, although interest has been renewed during the past two years. Most of the present

work is prospecting, or small development, indicating a general increase of mining in the near future. Points of access to the districts are via the Richardson Highway from Fairbanks.

Salchaket District

The Salchaket River is crossed by the Richardson Highway about 40 miles southeast from Fairbanks at Salcha P.O. (Munsons). The center of the district lies about 50 miles up river from Salcha Post Office and is reached best from there by winter travel up the river. Summer access is difficult as there is no regular trail, although travel can be accomplished by canoe or rowboat via the river. The principal mining in the past has been conducted on Caribou and Butte Creeks. The gold production has been small. Caribou and some of the other tributaries contain mostly unfrozen ground and the ground on the main Salchaket, while generally frozen, contains thawed channels and spots. The discovery of some coarse gold in 1924 in a shaft sunk in the Salcha Flats about 3 miles above the mouth of Caribou Creek caused a small rush to the district. A number of shafts were sunk by some of these prospectors but some could not get to bedrock because of the water encountered. No pay gravel was found in this prospecting, but it is reported that further prospecting will be undertaken this winter.

No actual mining was conducted in the district this

year, although about a dozen prospectors were engaged in prospecting and the Goldfield American Dev. Co. had two Keystone drills at work, for a little over a month during the early part of the season, prospecting on the Salchaket and its tributaries Caribou and Butte Creeks. This work had hardly gotten underway when all the prospecting conducted by the company in Alaska was brought to a close so that the dredging possibilities of these creeks are still to be determined. Jno. May installed an automatic dam for next season's work on George Creek; Roy Heinzerling put in a drain in preparation for future groundsluicing on Bullfrog Creek; McDowell and Stevens were prospecting on the various creeks during the summer; Gus Hagg sank a prospect shaft on Butte Creek; Tom Murphy prospected on Caribou, Pasco and Butte Creeks; Killian & Co. prepared for open cut mining on No Grub Creek. Kolhaus and Gobracht, who made the discovery on the Salcha Flats last year, returned to the district this fall to resume prospecting.

Delta District

Three groundsluicing and shovel-in operations with 7 men engaged are reported to have been conducted in this district. Jno. Wahlgren and two partners prospected on the South Fork of Rainy Creek, a tributary of the Big Delta River. A prospect cut 460 feet long was booned out with an automatic gate. The ground is 2 to 7 feet deep and

contains heavy bouldery gravel. Some fine flat but heavy gold was recovered and encouraging results are reported. C. Sutkoff associated with Dr. J. A. Sutherland prospected on Rainy Creek. Chas. Miller shovelled-in on Jarvis Creek and M. Teodoroff shovelled-in on Little Delta Creek.

Richardson District

Placer mining in the Richardson district has been conducted mainly on Tenderfoot creek, and on Banner Creek and its tributary Democrat Creek. The Richardson Highway about 73 miles out of Fairbanks, follows down practically all of Tenderfoot Creek. The highway crosses Banner Creek at about 70 miles from Fairbanks, the Banner Creek workings, being upstream by trail about 1-1/4 miles, with Democrat Creek a few miles beyond. The Richardson district from 1905 to date has produced $1,750,000 in placer gold. The production in 1925 is estimated at about $3000.00.

KH 59-15 The only activity on Banner Creek this season was that of I. Isaacson, who sluiced in a dump from his former drift mining on No. 1 above claim, left limit. The ground formerly drifted on this claim averages from 85 to 93 feet in depth. The pay is low grade and is split into two narrow channels, the main one being 70 feet in maximum width. This creek was formerly mined, downstream from this claim, but there has been no mining above this point.

Isaacson plans to prospect on No. 5 above this winter.

WA 5-6-10 A. Skievicz and Melvin groundsluiced on the left limit bench of Democrat Creek on No. 2 above. The material mined here is angular and is a residual deposit formed by the disintegration of the local porphyry bedrock which contains some small stringers and blobs of gold bearing quartz. Democrat Creek occupies a narrow V shaped valley which on this claim is but 25 to 35 feet wide at the bottom. The creek placer was formerly mined by drifting, later by groundsluicing. Booming in the creek with an automatic dam will be resumed next year. The creek ground is 15 to 25 feet and more in depth, consisting of alternating beds of muck and gravel. Most of the gravel is angular, with no large boulders present. A thin bed of rounded wash is present in the Creek placer lying on bedrock. The gold from Democrat Creek is usually very fine and coated with iron oxide. The gold bearing sands or concentrates recovered in the sluice boxes at this operation are put into a clean-up barrel, amalgamated, and put over amalgam plates.

Wm. Tokola with one man, operated an automatic dam in the creek bed on No. 1 above Democrat Creek in formerly drifted ground averaging 10 to 14 feet in depth. The muck and upper wash is removed by booming, leaving 1 to 2 feet of gravel to shovel into the boxes.

Fred Campbell, working alone, mined on the divide between Buckeye Creek, a tributary of Banner Creek and Bush Creek, the head of Tenderfoot. In the summer when water is available mining is done with a small canvas hose hydraulic plant. In the winter, the deposit is mined by drifting from a tunnel, the gravels being thawed with wood fires.

Tenderfoot Creek has been mined by drifting since 1906 and up to 1916 the gold output averaged close to $100,000 per year. Since 1916 very little mining has been done and in the past few years practically no mining was conducted. A small rush was made to this creek two years ago by prospectors which was probably caused mainly by the return of F. A. Jorgensen, a pioneer of the district who had been away for 20 years. Practically nothing resulted from this stampede, although with the return of a few of the operators of the earlier days further prospecting has been done and a number of operations are to resume this winter. Former mining was done on practically all the claims on Tenderfoot Creek from No. 2 above which is No. 1 claim on Bush Creek, a tributary, to No. 18 below. The best pay was found on the upper end of No. 1 below and on Discovery claim where rich ground was mined up to a width of 200 feet. Claims Nos. 9, 13 and 14 below were good claims. In general the pay on the other claims was found to be spotty or confined to narrow streaks so that much of the ground was mined at a loss. No

appreciable amount of gold has been found at the head of Tenderfoot Creek above its junction with Bush Creek, the gold apparently having been carried down Bush Creek. On No. 1 Bush Creek the average depth of the ground is 40 to 45 feet, gradually increasing in depth to 160 to 170 feet at the lower end of Tenderfoot Creek. Little is known about No. 19 below claim which is located at the junction of Tenderfoot Creek and the Tanana River. The thickness of the gravel ranges from 8 to 12 feet on the upper claims to 25 to 30 feet on the lower ones. The gravel is overlain by muck containing sand streaks. All of the ground mined was frozen to bedrock excepting the lower half of No. 14 below claim, which contained a thawed channel. Bedrock is Birch Creek schist. The average width of the valley ranges from about 1000 to 1200 feet. The gold is unusually low grade, averaging $11.50 to $12.50 per oz. on Discovery claim and above, increasing to $14.00 per oz. on the lower claims. It is coarse and well worn, and much of it is blackened with a coating of oxide. One nugget worth $700.00 was recovered on No. 1 below.

F. A. Jorgensen, working alone on No. 3 below last winter, drifted out a small area, and will sink a shaft on this claim this winter and operate with a small crew. During the summer he was sniping old tailings on No. 1 below.
J.P. Kuhl prospected alone on No. 1 Bush, sinking a shaft 45 feet deep last winter, using wood fires for thawing. He will

put down another shaft this winter. Emil Westerberg with 3 men was setting up a 50 H.P. boiler plant on No. 17 below and preparing to mine this winter. Chievicz and Melvin stripped some ground on No. 2 above to prepare it for next season's open cut mining and plan to sink a shaft this winter on Discovery.

Tolovana District

Twenty-seven placer operations employing 112 men were conducted in the Tolovana district in 1925. Ten winter drift mines employing 67 men were operated, 3 of these mines with 33 men continued as summer operations and 3 continued during the summer by prospecting and preparing for this winter's mining. Twenty-two summer operations were conducted with 83 men, as follows: 7 hydraulic plants with 28 men; 5 groundsluicing operations with 8 men; 3 summer drift mines with 33 men; 7 drift prospecting operations with 14 men. The Tolovana placer mines have always been handicapped because of the small water supply available. A period of very dry weather was experienced from the latter part of July until the latter part of August, but the season has been a normal one and gold production of about $200,000 will be made. The gold output of this district since its discovery in 1915, to date, is estimated to be over $4,500,000.

Livengood, the post office and only town in the

district, lies 60 miles northwest by airline from Fairbanks. Aeroplane service for passengers and some supplies has been available between those two points for several years, the one way trip being made in 45 minutes. The regular summer route is otherwise by launch from Nenana down the Tanana River and up the Tolovana River to the Log Jam, a distance of about 210 miles. At the Log Jam a transfer is made to shallow draft launches which operate to Trappers Cabin, a distance of 30 miles. A wooden track railroad now owned and maintained by the Alaska Road Commission is operated between Trappers Cabin and Livengood, a distance of 13 miles. An automobile and trailer equipped with flange wheels constitutes the rolling stock. The freight rates via this route from Nenana to Livengood are 5 cents per pound for staples and 6 cents for perishables. The shallow water conditions between the Log Jam and Trappers Cabin and the transfer at these points account to a considerable extent for these high rates. The Alaska Road Commission now has under consideration a plan to extend the railroad to Trappers Cabin, which will reduce the distance between these points to about 13 miles. About 100 tons of freight were brought into the district by this route this summer. Winter freighting is now all done from Dunbar on the Alaska Railroad. This distance to Livengood is 65 miles. The freight rate is 5 cents per pound. Last winter 150 tons of supplies were

freighted in. Average wages paid to labor are $5.00 for eight hours underground and $6.00 for 10 hours at the open cut mines, and board. Lumber is sawed at West Fork, where it sells for $120.00 per M. Water is available for mining from about May 5 to October 1, the supply becoming very small during the dry months which are usually the latter part of June, July, and the earlier part of August. The water supply is now obtained mainly from Livengood Creek and its tributaries. To supplement this small supply, a project was at one time considered to bring water from the South fork of Hess Creek. By constructing a dam about 1300 feet long and 35 feet high across Hess Creek about 1500 feet below Alabam Creek, this water could be stored in the large reservoir that would so be developed and taken off through a tunnel, or a cut about 3200 feet long, and conducted by ditch to the operations on Livengood. This tunnel would encounter only frozen gravel or a cut through this gravel divide would be 80 feet deep at the deepest places. On August 2, when but about 100 miners inches of water were flowing in Livengood Creek at No. 4 above, the flow on Hess Creek at the above mentioned locality, was roughly estimated to have been not less than 300 miners inches. This condition is sometimes reversed for the climatic conditions in the two drainage basins differ at times.

KK49-18

The Livengood bench has produced the greater

portion of the district's gold output. It follows down the right limit of Livengood Creek for a distance of about 4-1/2 miles and has varying dimensions and differing characteristics, but a defined main pay streak has been mined from the Jewel claim at Wonder Gulch to the Ready Bullion Assn. claim just east of Myrtle Creek. This portion of the main pay streak has shown a width ranging from 80 to 250 feet, averaging about 150 feet, excepting opposite Amy, Gertrude and Ruth Creeks, where the pay which came in from these creeks caused decided widenings. Thus at places on the Latrum claim opposite Gertrude Creek some of the pay was 800 feet wide and on the Ready Bullion Assn. it was over 1000 feet wide. Three other distinct benches of lesser consequence lie between the main bench and the present Livengood Creek in the viminity opposite Gertrude Creek. The depth of the ground varies from 25 feet on the Jewel Claim to 130 feet on the George Assn. The gravel ranges from a few feet to 30 feet in thickness and is overlain, sometimes by a clean muck, while at many places the muck is often mixed with clay, sand and rock fragments. Bedrock is a slate, chert and limestone and while the bedrock surface is often quite regular, the limestone bedrock especially, is sometimes most irregular. The gold is coarse, heavy and well worn. The gold content of the gravel mined has ranged from about 50 cents to $2.00 per square foot of bedrock with some small areas that were richer. The average

gold content recovered has been about $1.00 per square foot. Conditions for drift mining this deposit have in general been favorable for low costs as all of the ground is solidly frozen, most of the gravels permit easy driving of thawing points and relatively quick thawing, the gravels are easily picked down, very little timber is required, and bedrock is usually not difficult to clean up. The average height of face mined is 5 to 6 feet which includes from 1 to 2 feet of bedrock. Rough slabby bedrock, especially the limestone, may require more of the bedrock to be taken up. The cost of drift mining usually ranges from about 45 to 75 cents per square foot. Bostrom & Co. some years ago drifted a large area on the Marietta claim at a cost of 32 cents per square foot, a 4-foot face being mined, the gravels were of "chicken feed" size, bedrock was even, and all conditions were favorable for such a low cost.

Livengood bench terminates at Myrtle Creek. Drilling in the flats of Myrtle Creek and lower Livengood has failed to disclose any pay ground, some of the holes going 214 feet to bedrock, showing a little gold distributed throughout the gravels. Some mining has been done on Livengood bench east of Wonder Gulch, but east of Last Chance Claim no definite pay channel has been found. Further prospecting has, however, recently been done at this end, and good prospects are reported. No mining has been done

in the creek placers of Livengood Creek, the main gold distribution there having been found to occur principally within comparatively small areas just below the junction of Ruth, Gertrude, Amy and Lucky Creeks.

The principal drift mines operated on the Livengood Bench during 1925 were those of Bostrom and Company on the Ready Bullion Assn. and O'Connor and Kelly on the Letrum Assn. who mined both summer and winter. McIntosh Bros. drifted throughout the year on Eureka Assn. Winter drift mines were also operated by Aarvik and Sjoberg on the Letrum Claim; Fisko & Simons; Bulatovich & Marin on Hidden Treasure claim; Julius Larsen on Eldorado claim; Andrew Soderland on the Deep Channel Assn.; and Enstrom Bros. on the Sunnyside Assn. Enstrom Bros., A.Soderland and Julius Larsen prospected elsewhere on their ground during the summer and did development for this winter's operation. Pat Carroll sank prospect shafts on the Last Chance Claim in ground 70 to 75 feet deep, in search of an eastern continuation of the bench pay streak. P. Koda prospected on the Red Top Claim. Fisko Bros. & Normo were engaged in ditch construction for bringing water from Heine Creek to the Fisko Bench Assn. Claim, located at the far eastern end of Livengood bench. They also did some prospecting in ground 45 to 50 feet deep. Some good prospects are reported and the ground will soon be developed for drift mining.

Bostrom & Co., with a crew of 11 men mined 45,000

square feet of bedrock on the Steady Bullion Assn. last winter but only a portion of this dump had been sluiced up by August 1. The summer's operations were conducted on the same scale, but handicapped by lack of water for sluicing. The shaft here is 48 feet deep and is fully timbered. The main drifts are timbered with three piece sets and lagged across the top. The bedrock to the north of the shaft averages 7 feet higher than that to the south. The gravel on the south side is small and contains heavy gold, characteristic of the pay from Ruth Creek, while the gravel to the north is larger and contains typical Livengood bench gold. The horizontal distribution of the gold is quite irregular, but is practically all in the limestone bedrock. This bedrock is irregular in contour, containing soft spots with hard siliceous ribs. The average thickness of the gravel is 3 to 5 feet. The height of face mined varies from 4 to 5 feet; the greater part of it being in the limestone bedrock. No timber is used at the face, although small frozen pillars are left to support the roof where required and are later recovered. One shift only was worked, 8 men being employed underground. Thawing points are driven easily at the top of bedrock, 15 ten-foot points being driven at 5-foot centers per man per shift. These points are withdrawn, sweaters inserted and ground steamed for 12 hours. The gravel is easily picked down but the limestone bedrock is difficult. The material is shovelled

into wheelbarrows and wheeled to the bucket. The shovellers average 100 wheelbarrows per man shift. The dump is hydraulicked into the sluices, using pumped water through a small nozzle, and with water from Myrtle Creek. The operating costs are 40 to 50 cents per square foot of bedrock, the higher cost being due to unfavorable bedrock. The operators state it is cheaper to mine in the winter, for besides requiring no timber, better miners are then available.

O'Connor & Kelly employed 19 to 20 men on their summer operations on the Letrum Claim and 8 to 15 men during the winter. The shaft is 90 feet deep, being 8 feet in bedrock. The gravel here is 4 to 8 feet thick. Bedrock is a black chert and white slabby limestone, and but for occasional high reefs is fairly regular in contour. Thawing points are driven with water or steam and spaced 2-1/2 feet apart. Points are withdrawn and 10-foot sweaters inserted. The ground is thawed 4 to 5 hours, the sweaters are then pulled half way out and steaming continues for 5 to 6 hours longer. Two men, working double, set 20 to 24 points per shift. To prevent the slabbing of the roof, posts with a short cap are set along the face with each thaw advanced. They are spaced 15 to 25 feet apart. The operating costs are about 55 cents per square foot of bedrock.

J. McClelland hydraulicked on the first bench, right limit of Livengood Creek on No. 4 A above creek claim,

with a crew of 3 men working one shift only. The gravel is comparatively small in size with no large rocks and averages from 8 to 9 feet in thickness, but is overlain by 5 to 40 feet of muck and silt. The bedrock is a black chert. This overburden is stripped in the spring by groundsluicing and hydraulicking. The gravel is piped into the head of 3 to 4 lengths of sluice boxes and the tailings are stacked with a giant. Hydraulicking of the gravels is only done when a full head of water is available to operate both the 3-inch nozzles in the field and the 3-inch stacker nozzle under the 75-foot head which holds for only about one month during the average season when 5000 to 6000 square feet of bedrock are mined.

K449-43 Bentley Falls with 2 men hydraulicked on No. 3 bench claim on Ruth Creek. A pay streak 50 to 80 feet wide follows along the right limit of the hill. Bedrock is a siliceous mineralized limestone intruded by a porphyry. The slate contact is close by. Most of the material mined is angular, only some of the lower wash on bedrock in the main channel being slightly rounded. There are no large rocks. It is mostly a residual deposit and contains a high gold content. The thickness of the material sluiced into the sluice boxes averages from 6 to 10 feet, the overlying 3 to 20 feet of muck first being stripped off. The operation is handicapped by a very small water supply usually only

available for a few short splashes per day, during a great part of the season.

The largest hydraulic operation conducted in the district is that of C. N. Hudson on Discovery Assn. claim at the lower end of Lillian Creek. After stripping the 4 to 10 foot of gravel of 8 to 15 feet muck, the gravel bank is piped down and piped into the head of a long string of 20 inch sluice boxes. The upper 20 boxes are set on 7-inch grade and paved with pole riffles, the lower 15 boxes are set on 4-1/2-inch grade and are equipped with perforated steel plates lying on cocoa matting. The gold is fine and rusty. A natural dump is available for the tailings. Water for hydraulicking is brought from No. 3 above Livengood Creek through the Samson ditch, 2 miles long, and delivered to the giant with a 4-inch nozzle through a short pipe line 10 to 7 inches in diameter under a head of 25 to 75 feet. During periods of low water supply, the water is impounded in the ditch and used in short intermittent splashes. A crew of 8 men is employed, two shifts being worked. These hydraulic operations first started in 1924. M. Beegler hydraulicked on No. 1 above on Lillian Creek, just above Hudson's operation. A pay channel is mined here about 75 feet wide containing high grade gravel 2 to 10 feet thick overlain at the lower end by 8 to 10 feet of muck and silt overburden which is up to 35 feet thick at the upper end. The very small water supply limits the mining here to a short period in the

spring and fall, much of the time water being available only in short splashes. Barker & Godfrey also conducted a small hydraulic operation on the claim above Boegler's where some good pay is also found.

1948-49 E. R. Hudson installed a hydraulic plant on his property on Olive Creek early this season and hydraulicked the creek gravels on Discovery Claim. Mining on this property was formerly conducted by groundsluicing and hydraulicking with a small hose outfit. The creek wash ranges from 20 to 25 feet in thickness and consists mostly of slide and angular material with some fairly well rounded gravel. There is practically no muck overburden. Bedrock is a slate and porphyry. The gold is fine but heavy and distributed mostly on bedrock. Small fragments of cinnabar are found. The water for the No. 1 giant used in the field with a 2-1/2 to 3-inch nozzle under a 125 foot head, is brought from Deer Creek by a 1-1/2 mile ditch. Water for the ground-sluice comes from Olive Creek. During the dry weather period the water is impounded and used intermittently, an average of 4 to 6 ten minute splashes being obtained in 24 hours. The material is piped into the head of a long string of 24 inch sluice boxes set on a grade of 7 inches. Tailings are disposed of by adding additional boxes from time to time to the lower end. A stone boat operated by steam hoist is used for taking the boulders out of the pit.

Olive Creek has built up a large alluvial fan about 1-1/2 miles long, extending from Discovery Claim down to and over the flats of the Tolovana River, covering about 300 acres. This fan is from 35 to 45 feet thick and overlies 8 to 10 feet of stiff clay which is underlain by the Tolovana gravels. It is composed of successive layers of material most of which is angular at the upper end and more rounded on following downstream. From 4 to 6 feet of muck covers the greater area of the fan. The ground is all frozen. Fine gold can be panned almost anywhere. A considerable number of prospect shafts have been sunk, which are mostly confined to the main valley of Olive Creek over a width of 500 to 800 feet. The owners contend that this prospecting has given an average of better than 50 cents per cubic yard. Some open cut mining has also been done at different places on the fan. A long cut was bboomed out several years ago on the Perfection claim and one on the Gas Bag claim adjoining below and continuing across No. 3 below and onto the Clifton claim. These cuts did not reach the clay bedrock but the clean-up is reported to have closely equalled the shaft prospecting.

KK49-160 B. Douglas groundsluiced on the right limit bench of Gertrude Creek; KK49-165 Tony Corgan groundsluiced on Lucky Creek and Oscar Oliver KK49-163 sniped with a rocker on Lucille Creek.

Tom Verdie groundsluiced, and Johnson & Healy drifted a small area during the winter on Wilbur Creek, a tributary of the Tolovana River. J. LeMont prospected on Tolovana River near Wilbur Creek, and McDougall and Brown sunk an 80 foot prospect shaft on the Tolovana River just above Livengood Creek which did not get to bedrock but showed ~~small~~ prospects of a little fine gold throughout the deep gravel. Jno. Lakso and partner prospected and groundsluiced on Butte Creek, a tributary of upper Hess Creek where some gold had been found. Olson & Browman operated a small hydraulic plant on Quail Creek.

Hot Springs District

Placer mining in the Hot Springs district was conducted during 1925 at 27 operations with 85 men engaged. Eight hydraulic mines with 29 men; 11 groundsluice and shovel-in operations with 21 men; 4 summer drift mines with 24 men, and 4 winter drift mines with 11 men were operated. Seven men were also engaged in prospecting during the summer at five localities and St. Louis interests investigated the possibilities of the district employing 12 to 25 men. The open cut mines in the district have always been handicapped by the lack of sufficient water during the greater part of the season and the inability to procure a reasonably reliable water supply even should long ditch lines be constructed. The 1925 season experienced an exceptionally

dry period during July and August, and as options had been given on some of the properties, the number and size of the operations were somewhat reduced. The gold production from this district this year is not expected to be as large as in 1924.

Stream tin is an important by- roduct of placer mining in the Tofty section. Thirteen tons of stream tin averaging 55 to 58 percent in tin metal were shipped from Hot Springs to the smelters at Singapore this summer and about 5 tons more were to be shipped in the fall. Six tons of these tin concentrates were, however, a three seasons' accumulation at one of the drift mines. With the present price of tin a good profit is realized as the cost of recovering the tin concentrates is incidental to the gold recovery. One of these shipments of 13585 pounds averaging 53 percent in tin metal netted a return of 23.8 cents per pound of ore after allowing for sacking, freight of 3 cents per pound to Hot Springs, freight to Singapore, brokerage, insurance, smelting charges, etc. with the price of tin metal at 50 cents per pound.

Summer freight rates by road from Hot Springs to Eureka, a distance of 22 miles, are 2-1/2 cents per pound. Freight to the Tofty section is taken from Hot Springs, 6 miles down the slough by boat to the Landing, from where it is hauled over a good road for 12 miles to

old Tofty for 3-1/2 cents a pound and to the present Tofty ... in the Woodchopper area, 8 miles further to the east for 4 cents per pound. Very little winter freighting into the district is now done.

Most of the placers that have been mined in the Tofty section show the main pay gravels to have been confined to more or less separated and isolated areas located on the upper end of Cache Creek, the benches of Sullivan Creek east of the Tofty, and at the lower end, of Tofty, Idaho, Miller, Willow, Innesville, and Hokely Gulches and on the right limit of Woodchopper Creek opposite the mouths of Deep and Camp Creeks. This characteristic also holds east of Cache creek in the western end of the Eureka section. These separate areas of pay gravel contain the same kind of gravel, the same character of gold and all contain stream tin and are located within relatively close distances to each other in a general line bearing east and west. A plausible explanation of their origin could therefore be, that an old channel may at one time have existed at a higher elevation along the northern edge of the valley and which was destroyed by subsequent erosion and its contents resorted and transported to the present location of the placers. The placers on American Creek and Boulder Creek lie beyond this general belt and do not possess any unusual characteristics. The placers on Cache Creek are from 40 to 55 feet in depth and on the Sullivan benches up to 65 feet, consisting of 5 to

10 feet of gravel overlain by muck and silt. On Discovery Claim at Tofty Gulch, the shallowest ground is 29 feet deep. At Miller Gulch the ground is 50 to 65 feet deep, 70 to 90 feet at Willow Gulch, 90 to 130 at Vokely Gulch and 130 to over 200 feet deep at Woodchopper. All of these placers have gravels overlain with a deep covering of frozen muck and silt, and excepting a few thawed spots are solidly frozen. These placers have been intensively mined by drifting for which conditions have been generally favorable. Large areas were formerly drift mined at costs of 45 to 65 cents per square foot of bedrock, but with the small remaining areas that have been so mined in recent years, the costs have increased.

The placers in the Eureka section are bench or "bar", and creek deposits. The bench or "bar" deposits are located principally along the right limit slope of Pioneer Creek and along the slope of the hill on the north side of the valley from Eureka Creek to Rhode Island Creek. They range from a foot up to about 15 feet in thickness on the more important "bars", which are known as What Cheer Bar, Excelsior Bar, and Glenn Bar. These deposits are mined mainly by hydraulic methods, most of this mining having been handicapped by the inability to procure suitable water supplies. Small creeks such as Seattle Jr. and Doric Creek have cut down through What Cheer, Jordon and Pippin bars, making rich gulch placers and Glenn Gulch lying between Excelsior and Glenn bars was an

exceptionally rich placer. These gulch placers have been drift mined and were later groundsluiced or hydraulicked. The creek placers have not been very productive, excepting for a relatively few claims on Eureka Creek above Pioneer Creek. The placers mined on the other Creeks have been principally bench deposits. At the western end of the Eureka section at the head of Baker Creek and its tributaries Gold Basin and Killarney Creeks, gold and tin bearing placers with other characteristics similar to those on the Tofty section are found and have at different times been drilled and otherwise prospected, but have been mined only to a very small extent.

448-9 The principal placer mining in the Tofty section during 1935 was conducted at the drift operations of Dimnich, Albrecht & Millianic with a crew of 15 men on the Olga Assn. on Deep Creek opposite Innesville Gulch, and Miljevich Bros. & Fredlund on the Hard Luck Assn; the hydraulic operations of Cleaveland and Howell with a crew of 6 on the Sullivan Creek bench. Hanson & Marco drifted out an old pillar at the line between the Wild Goose and Golden Star Claims. In Tofty Gulch, Donahue & Strand put down a prospect shaft on the Peg Leg Assn. Claim; C. F. Schneider prospected on Discovery Claim, and Chas. Grill groundsluiced at the upper end of the gulch. J. Bickford working alone, prospected on the hillside between Hokeley and Innesville Gulches in

searchof bench ground. A scraper operated by steam hoist was used in making a cut, but the operation at the time had not been successful. J. Howell & Co. with 6 men conducted winter drift operations on Deep Creek on the Cleopatra Claim. A narrow pay streak was mined, but the operation encountered wet heaving ground. Donohue and Donnelly drifted out a small area on Idaho Gulch during the winter. Otto Hovely conducted small drifting operations on Cache Creek and Se. Stewart mined a small area by drifting during the winter. On American Creek, M. Murray used an automatic dam in stripping the pay gravels of muck and top gravel overburden. The pay gravel was shovelled into wheelbarrows and wheeled to a self-dumping carrier and hoisted by steam power to the sluices. Besonen and Burston, and Ed Ness, groundsluiced and shovelled-in, and J. Jorgen dug a small ditch and prospected. Louis Anderson conducted a small hydraulic operation on Boulder Creek.

KNB-44 St. Louis interests under the direction of Roy W. Elliot, a mining engineer, investigated the placer possibilities of the Lofty and Eureka sections during the summer. A Keystone drill was used for prospecting the deeper and the wet ground, and shafts were sunk on the shallow benches. The possibilities of bringing in suitable water supplies were also investigated, the principal investigation in this respect being that of the Hutlinana River.

The company withdrew from the district in August.

Considerable new prospecting will be done during this fall and winter. A. Bock will drill on Deep Creek and Kilarney Creek; J. Howell will drill on the Sullivan Creek benches and to the eastward; A. Hanson will drill on the Woodchopper Flats; and Tilleson & Lind will sink prospect shafts on Cache Creek. Some good prospects are expected and indications are that an increased amount of placer mining will be conducted next season.

In the Eureka section, J. H. Frank & Co. with a crew of 3 to 6 men, hydraulicked for a short while on Shat Cheer Bar, but their principal mining was done on Doric Creek, a tributary of Pioneer Creek. On Doric, a cut about 750 feet long averaging 85 feet in width at the upper end and 50 feet at the lower has been boomed out by the aid of two automatic dams to where 3 to 7 feet of pay gravel remains. This work was started several seasons ago. In order to provide the necessary grade to further reduce the thickness of the remaining gravels a Sexsley scraper operated by a steam hoist has been installed at the lower end for scraping out a deep dump from which the tailings will be scraped and stacked. It is the plan to boom down to about 1 foot of gravel, which will then be shovelled into sluice boxes. This gravel is stated to be unusually rich in gold. M. B. Dill and two men hydraulicked with a small hose outfit

on Last Chance Bar, a bench of Pioneer Creek, east of Seattle, Jr. Creek. Jno. Malin sniped on Last Chance Bar and Chas. Allen sniped on Seattle Jr. Creek. Bob Wighot shovelled-in on No. 1 below on Eureka Creek and J. E. Green groundsluiced and shovelled-in on the bench on No. 3 above.

Farmer & Jones hydraulicked on a bench on the left limit of Eureka Creek on what is known as the McCaskey Bar. While this bar was known for many years to be gold bearing, it was not mined until last season. The lower end of this bar lies about 85 feet above the level of Eureka creek on a slate bedrock. The portions so far mined show an average thickness of 10 feet, although the deepest prospect shaft put down is 24 feet deep. The average gold content is about 10 to 15 cents per square foot with a width of pay indicated about 250 feet wide. A 2-mile ditch from Kentucky Creek and an 800-feet pipe line, 10 to 7 inches in diameter, delivers water to two No. 1 giants with 2-1/2-inch nozzles under a head of 65 to 100 feet. The water supply is small and must be used in short splashes most of the time.

Johnson, Sundstedt & Hensley hydraulicked on Alice Bench, located well to the base of the hill just east of Glenn Gulch. The ground averages 5 feet in thickness. The gravels are piped into the head of the boxes with two No. 1 giants with 2-1/2-inch nozzles operated under 30 to 45 foot

head. The water supply is small and much of the time must be used in short splashes. Tailings are disposed of without stacking. In an average season about 100,000 to 120,000 square feet of bedrock is mined.

Stevens & Dill groundsluiced a short while on Shirley Bar and plan to install and operate a small hydraulic plant there next season. Lund and Anderson hydraulicked on the benches of Rhode Island Creek and Tom Loveland groundsluiced and shovelled-in on Seattle Creek, a tributary. On Omega Creek Olson & Evenson groundsluiced and shovelled-in, and Heath & Overby took out a small dump last winter by drifting. V. Erickson with one man hydraulicked on Chicago Gulch and Reider & Barker prospected on Thanksgiving Creek and elsewhere.

Rampart District

Two hydraulic operations with 8 men engaged; 7 open cut operations with 10 men engaged in booming with automatic gates or groundsluicing, and shovelling-in; and 3 winter drift operations with 4 men, constituted all the placer mining conducted in the Rampart district in 1925. The principal operations conducted were those of Chas. Swanson with a crew of five men, who hydraulicked on the benches of Hunter Creek at Dawson Creek; A.Ott with 2 men who hydraulicked on lower Hunter Creek; and the automatic dam and shovel-in mining of Climie, LaPorte and Crockett on Little Minook Creek. Groundsluicing and shovel-in mining

K448-43

K448-46

was done by C. C. Clemens on Hunter Creek; Geo. Pride on No. 40 claim Big Minook; McKenty and Hautier, and Frank Hawley on Slate Creek; Tom Antonsen on Little Minook, Jr. and Jno. Ross on Little Minook. Placer mining was done by Crockett and La Porte on Hoosier Creek; H. Miller, and J. Climio, on Idaho Bar.

Ruby District

Detailed reports from the placer operations conducted in the Ruby district during 1925 are lacking. General indications are that the gold output for this year will show a decrease from the previous year. Small shovel-in operations were conducted on Bear Creek, Greenstone, and other tributaries of Long Creek. Drift mining was conducted on a small scale, but by a considerable number of operations, the principal ones being located mainly on Poorman, Flat and Trail Creeks. Drift mining is also reported to have been conducted on Long, Moketchum, Little Pup, Timber and Big Creeks, with some prospecting on these creeks and Birch, Spruce and Glacier Creeks. The wagon road from the settlement of Long has been completed to the Solatna River and a short ways beyond.

Koyukuk District

Reports from the Koyukuk district indicate a general improvement in placer mining and an increase in prospecting. From 80 to 90 men were engaged at the com-

paratively large number of small drift, open cut and prospecting operations conducted during 1925. The district is very isolated, the open cut mining season is short, the water supply is generally small, particularly on the benches, and the cost of mining is high, but the placers are generally richer in gold than those being mined in most of the other districts and good clean-ups are reported. Most of the placer mining is conducted in the Nolan-Coldfoot area and to the south on the South Fork of the Koyukuk River and its tributaries. Very little mining is being done in the Hog and Alatna River areas. An increase in drift mining is noted, most of which is done during the winter. The summer operations are conducted mainly by groundsluicing and shovel-in methods, the principal operations being on the benches of Nolan Creek and Hammon River, where high grade placer was discovered several years ago. Gold in pay quantities has recently been found on Porcupine Creek and on the benches of Vermont Creek and elsewhere. The placers on the Hammon River, Nolan and 12 Mile Creeks and the South Fork of the Koyukuk River are under consideration for hydraulic mining. Drilling was done on Slate Creek.

This district is severely handicapped because of its isolated location which naturally adds greatly to the cost of mining and prospecting. Freight for the district comes via the Alaska Railroad and Nenana and is taken down

the Yukon River to Koyukuk Station. From here it is taken up the Koyukuk River to Bettles at a cost of $65.00 per ton. From Bettles, it is taken further up the river in small shallow draught scows pulled along by horses, to Wiseman (Nolan) a distance of about 65 miles at a cost of 3 cents per pound. The freight costs from Seattle to Wiseman average around $300 per ton or 15 cents per pound. The people of the district are asking the Alaska Road Commission to construct a suitable trail from Bettles to Wiseman for tractor haulage which they contend will reduce the freighting cost between these points to 3 cents per pound. The project appears to be well justified. An aeroplane landing field was cleared this summer at Wiseman and several trips of the plane were made from Fairbanks with passengers and supplies. The average wage scale for the district is $6.00 per day and board or $10.00 per day without board. Wood around Nolan costs $16.00 to $17.00 per cord.

The following list of placer operations conducted in the district during 1925, giving their location, the method of mining and the approximate number of men engaged at each one has been compiled from information received from different sources. While it is not completed and may contain some errors it will serve to give a general idea of the placer mining in the district.

Name of Operator.	Creek.	Method of mining.	No. of men.
Watts & Brady	Hannon River.	Open cut.	2
" "	" "	Winter drift	4
- Ness	" "	Open cut	1
Eaton, Wool, Wanamker & Co.	Nolan Cr.	Winter drift.	5
Workman & Wanamaker	"	Winter drift	?
" "	"	Open cut	2
Pingel & Jones	"	Open cut	2
Peter Dow	Archibald Cr.	Open cut	3
" "	"	Winter drift	?
Martin Sliscko	Vermont	Open cut	2
Miller & Davey	Smith	Winter drift	2
E. Poss	"	Winter drift	3
Tom Brady	Swift	Open cut.	?
James Wilson	Emma	Open cut	?
" "	"	Winter drift	2
E.Morton	"	Open cut	?
Ed. Marson & Co.	Porcupine	Winter drift	4
Stanich Bros.	"	Open cut	2
Bob Mc Intyre	Fay	Open cut	1
Sam Sanderson	Twelve Mile	Open cut- prospecting.	?
Tom Kovich	" "	Open cut	?
Jno. Kleffenz	" "	Open cut	?
Alexon & Gilbert	Slate	Drift	4
James Menana	"	Open cut	3
James Kelly	"	Drilling	?
Larson & Johnson	Wild River	Open cut	2
Joe Matthews	"	Open cut	?
Frank Smith	John River	- -	?
Martin Josephson	" "	- -	?
Matthews & Co.	Jim Pup	Open cut	3
Patterson & Co.	Lake Cr.	Open cut	3
" "	"	Winter drift	?
Shooly & Swift	Tramway Bar	Open cut	2
Bob Burford	So. Fork Koyukuk	Open cut	1
Henry Mistparno	" " "	Open cut	1
Giest, Summers & Smith	Lake Cr.	Drift	3
J. Stevenson	Gold Bar	Proppecting	1
Jno. Peterson	60 Mile	Drift	1
Joe Metzenberg	" "	Drift	1
Ben Sayres	" "	Drift	1
Wm. McCamant	Eureka Cr.	Drift	4
H.F.Byram	"	Drift	3
Andrew McLeod	Hog River	-	?
Jack Dodds	Gold Cr.	Open cut	1

Chandalar District

Twelve placer mining and prospecting operations with about 22 men engaged were conducted in the Chandalar district in 1925. The principal mining was conducted by three small winter mines on Little Squaw Creek; and two small winter drift mines, and one groundsluicing operation on Big Creek. The gold output for 1925 was small but several new discoveries have been made which should increase the output for next year. The accessibility of the district is being much improved by the wagon road which is now under construction from Beaver, a settlement on the Yukon River to Caro, a distance of 74 miles. From Caro it is 46 miles farther to the operations on Little Squaw Creek. Present freighting rates from Beaver to Little Squaw Creek are 15 cents per pound during the winter and 40 cents per pound during the summer. Labor is paid $6.00 for 8 hours and board. The cost of boarding is about $4.00 per man day. Wood costs $16.00 to $20.00 per cord at most of the operations on Little Squaw Creek. The most important happening in the district was the discovery of pay last winter on Little Squaw Creek by Carlson, Buckley and Amero. A prospect shaft was sunk 164 feet to bedrock through solidly frozen ground on Discovery claim, two claims below the rich bench ground formerly mined by Fred Smith. Two claims below Discovery, Little Squaw Creek enters the flats of

K131-23

Lake Creek. The upper 80 feet of this deposit is a mixture of muck and big rocks, which overly 84 feet of heavy gravel. The main pay is in the 3 to 3-1/2 feet of gravel, lying on top of bedrock, and so far has been found to be restricted to a streak about 25 feet wide with low grade side pay. The gold is coarse and shotty. A small area was drifted, yielding an average of $2.30 in gold to the square foot of bedrock. A larger steam plant was shipped in this fall. The prospect shaft is to be enlarged and active drifting will be done this winter.

Wm. McDaniels with one man drifted last winter on the Smith ground on Little Squaw Creek; Joe Wilkes working alone took out a small winter dump; Oscar Otterson, and McCauley prospected.

K+31-22 O. J. Nicholson with 5 men drifted during the winter on Big Creek, prospecting during the summer; Joe Shaw also drifted; A. Newton with 2 men groundsluiced; and D. A. Murphy prospected. K+31-24 The Chandalar Gold Company had two men prospecting on Tobin Creek. Coarse gold was found last spring by French Joe on a rim of Tobin Creek well downstream from where most of the former prospecting was done. Ellis Anderson prospected on Baby Creek and found very encouraging gold prospects. K+31-25 Olson prospected the benches of Dictator Creek and found some gold.

Iditarod District

The placer gold production from the Iditarod district for 1925 showed a further decrease, ~~being less than in 1924.~~ This is partly due to the very dry season experienced and the smaller production made by one of the dredges. Twenty-seven placer operations engaging about 140 men are reported to have been conducted during the year.. Those include two dredges employing 38 men; 12 hydraulic mines with 74 men; 9 groundsluicing operations with 20 men; and 4 snipers. Besides these about 15 men were engaged in drilling and ditch construction.

K+13-23 The Riley Inv. Co. dredge on Otter Creek was delayed in starting operations as new engines were installed and the dredge generally overhauled. The dredge of the Northern Alaska Dredging Co. operated the full season. Richardson Bros. and Pete Miscovich hydraulicked on Otter Creek and Frank Salen hydraulicked on Granite Creek. K+13-31 Ten placer operations with 30 men were conducted on Flat Creek and at its head, chief among which were the hydraulic operations of Hays & Savage, who purchased the ground and plant of the Alpha Mining Co. this summer; and the hydraulic operations of Olaf Olson on the Hill Top Assn. Pete Steger groundsluiced on the Summit Assn. and Loranger & Co. wheeled to a self-dumper on Willow Creek. K+13-15 Frank Manley had a crew of men at work on the construction of a 10 mile ditch from Bonanza Creek to bring water to

Willow. He also did some drilling on Willow Creek but the dragline excavator was not operated. KK 73-6 The Chicken Creek Mining Company employed about 14 men at its hydraulic operations at the head of Chicken Creek and a very creditable clean-up is reported. On the Kuskokwim side, hydraulic plants were operated by KK 73-32 Barney Walsh, and by Harry Stevens on Donlin Creek; by KK 73-55 Riley & Kirk on George River; and by Jno. Zeller on KK 73-49 Moore Creek. Geo. Glass did further drilling on Moore Creek during the spring in the investigating of its dredging possibilities. It is reported that the options have since been given up.

Innoko-Tolstoi Districts

The principal placer mining in the Innoko district during 1925 was done by three small dredges. The Quinan and Ames Dredging Corporation operated its 2 cu. ft. combination type of dredge on upper Ganes Creek. KK 73-51 The Flume KK 73-35 Dredge Company operated its 2-1/2 cu. ft. flume dredge on Yankee Creek, and constructed a similar dredge on Little Creek which started digging in September. These two dredges are powered with gasoline engines ~~but will be electrically driven as soon as the hydro-electric plant under construction is completed.~~ The dredge of the Innoko Dredging Co. remained idle but has been leased by Frank Joaquin, who will operate it next year on his ground on Ganes Creek. A slip scraper plant and two small open cut mines

were also operated on Little Creek. A little groundsluicing and shovelling-in was done on Spruce Creek and Victor Gulch. Four small mines were operated on Ophir Creek, chief among which were the scraper operation of Collins & Hard, and the open cut operation of Berg & Meier.

Nothing new has been reported from the Tolstoi district where a few small drift and groundsluicing operations are reported to have been conducted in the Mt. Hurst area on Esperanto and Madison Creeks, and in the Cripple Creek area on Cripple, Colorado, Eldorado and Boob Creeks.

Marshall District

Very little placer mining activity is reported from the Marshall (Wade Hampton) district. A few small open cut operations were conducted on Willow Creek, and on Disappointment and Elephant Creeks, tributaries of Wilson Creek. Several men were shovelling-in on Buster Creek. Only 3 or 4 men are reported as mining on the Stuyahok River.

Kuskokwim Region

1944-1 The principal placer mining conducted in the Kuskokwim Region continued to be the operation of the 4 cu. ft. deisel driven stacker dredge by the Kuskokwim Dredging Co. on Candle Creek, near McGrath. About 30 men were employed by this company. Schuttler & Schuler groundsluiced

on Carl Creek and a similar small operation was conducted on Candle Creek. Dick Matthews with a crew of 7 hydraulicked, Isabel and Pontella, and Hugh Sherwood and partner groundsluiced, on Hilden Creek, a tributary of Nixon River; Strand & Pearson groundsluiced on Ruby Creek, Jno. Strand with two men mined on Eagle Creek, and several others mined and prospected in that vicinity. About 7 men have been prospecting on the upper reaches of Stony River where encouraging results were evidently obtained as some of these prospectors have recently taken in additional supplies.

The New York-Alaska Gold Dredging Co. has been most active in drilling additional dredging ground on the Tulusak River in the vicinity of Bear Creek. The machinery and material for a 4 cu. ft. deisel driven, combination type of dredge was landed at Aniak during the summer. It will be freighted to the property this winter and erected and operated next season by this company. It is reported that recent drilling has developed enough additional ground for another dredge. Several small open cut operations were also conducted elsewhere in the Tulusak Aniak district, mainly on Spruce and Canyon Creeks.

A small amount of placer mining by open cut methods was conducted in the Goodnews Bay district, reports

indicating an increase over recent years.

Seward Peninsula

Statistics on the placer gold output of the Seward Peninsula during 1925 are not yet available, but general reports indicate that it was less than that of the previous year. About 70 percent of the placer gold output of the Seward Peninsula in the past three years has been produced by the dredges and most of the balance by the hydraulic plants and other open cut mines. This year's decrease in production can be attributed to the smaller yardage dug by the dredges, the reduced scale of operation of the hydraulic elevator plants on Little Creek, and the shortage of water experienced during midseason by some of the hydraulic plants in the northern part of the Peninsula. The season around Nome was, however, an unusually wet one after about July 15. There were 16 dredges operated on the Seward Peninsula in 1925, compared to 18 dredges operated in 1924. A number of the dredges did not start operations until late in the season. Of the dredges operated in 1925, six are located in the Nome district, 3 in the Solomon; two in the Council; one in the Casadepaga; one in the Koyuk; one in the Kougarok; and two in the Fairbanks Hoare district.

The most important event in placer mining during

1925 was the acquisition of the Hammon Consolidated Gold-fields Company interests and those of the Nome Mining Corporation (formerly the Alaska Mines Corporation) by the U. S. Smelting, Refining & Mining Co. This brings the principal dredge holdings on the Nome tundra under one ownership and after this season all of the company's dredges will be operated, in which event a large increase in gold output will result.

The U. S. Smelting, Refining & Mining Company employed from 200 to 350 men during the season, most of whom were engaged in connection with the water thawing operations. Further experiments were conducted in thawing with water at natural temperatures under the direction of a special corps of technicians who conducted most systematic studies of all features involved. A large volume of ground was thawed in advance of dredging, as many as 1700 thawing points being in service at one time. The method of churn drilling holes to bedrock in which the thawing points (1-1/2-inch pipe) are inserted, has been adopted at places where difficulty has been encountered in driving the points to bedrock by the usual practice. These holes are drilled in equilateral triangular relation to each other with 32 foot spacing and experiments were made to increase this spacing up to 64 feet. The No. 1 dredge was not operated, but the No. 2 and No. 3 dredges started the season's work on September 8 and

6, respectively. The 3-1/2 cu. ft. dredge No. 4 (formerly operated by the Alaska Mines Co.) was operated on Snake River, although it was shut down for eleven days early in the season because of a broken upper tumbler shaft. The hydraulic elevator operations on Little Creek were restricted to one pit, which had not been completed the previous season. These elevator operations will probably not be conducted for the next few seasons as their water supply will be used for thawing purposes ahead of dredging. This company also did much work on their ditches and will have the water from three ditch systems available next season.

K145-17 The dredges and holdings of the former Alaska Dredging Assn. and the Candle Creek Dredging Co. were acquired last year by the Fairhaven Dredging Co., and these two dredges were operated the latter part of the season on Candle Creek, in the Fairhaven district, under the management of the Kaowalik Mining Company. These dredges were idle in 1924. Most of the ground on Candle Creek is frozen, but is thawed with water under pressure. The old Flower dredge which has been lying idle for a number of years was put in repair and will be operated in 1926 by the Solomon Valley K153-120 Dredging Company on the lower Solomon River. J. Bellevue rebuilt and operated his dredge on Dry Creek, near Nome. The Crooked Creek dredge (Mabes & Hansen) operated on Albion K144-130 Creek, a tributary of Crooked Creek. K145-31 The Dime Creek Dredging

Co. moved its dredge upstream aways, installed a water thawing outfit, and resumed dredging on Sept. 14. The dredge of the Lomen Reindeer & Trading Co. was operated under lease on Solomon River by Scott & Newberg. The dredge of the Alaska Inv. & Dev. Co. on Osborne Creek; the Luther dredge on Budd Creek; and the Alaska Kougarok dredge on Taylor Creek; were idle. The dredges operated during 1925 are mentioned in the general report.

The U. S. Smelting, Refining, & Mining Co. on Little Creek conducted the principal hydraulic elevator operations. E.W. Quigley on Big Hurrah Creek; Lee & Swanberg on Osborne Creek; Stewart Bros. on Monument Creek; Tom Jensen on Jess Creek; Olson Bros., Porter & Co., Porter Leonard & Johnson, and Hegberg & Holm, on Dime Creek; L. A. Sundquist, Swanson & Nordlund, O. A. Lundberg, and the Kewalik Mining Company on Candle Creek and its tributaries, operated their hydraulic plants and hydraulic mining was also conducted by a number of smaller plants, mainly in the Nome and Fairhaven districts. Groundsluicing, shovelling-in and similar methods of mining were employed in practically all of the districts. A small number of men continued to work the beaches around Nome and Bluff, using long toms and surf washers. An operation at Bluff is reported to be using a scraper or excavator operated by diesel engine power for mining the placers along the beach near the mouth of Daniels

Creek.

Very little drift mining was done during 1925. Several small drift mines were operated on Dime Creek in the Koyuk district and several small winter dumps were taken out in the Nome and Fairhaven district. Prospecting by sinking shafts through the deep lava capping and drifting in the underlying gravel is still being done on the Inmachuck River.

American Creek in the Casadepaga district, and Coal Creek, a tributary of Solomon River were being drilled during the season to ascertain their dredging possibilities. A large dredging field is reported to have been developed during recent years on Bonanza Creek about 125 miles east of Nome.

Kobuk Region

Placer mining in the isolated Kobuk region was conducted in the Squirrel River and Shungnak districts on streams tributary to the Kobuk River, which empties into Kotzebue Sound. According to reports some large clean-ups were made during 1925 in the Shungnak district, where Frank Ferguson K-31-1 and partners on California Creek, and Fred Johnson K-37-3 on Dahl creek conducted the principal operations. The placers on these creeks are reported to be very rich with coarse gold, some nuggets worth up to $300.00 being found.

Hydraulic plants have recently been installed on these creeks according to reports. The principal operations in the Squirrel River district were conducted mainly on Klery Creek, where a few small open cut and drift mines were active.