NOTES ON MINING IN SEWARD PENINSULA.

By PHILIP S. SMITH.

INTRODUCTION.

No party from the Geological Survey was detailed to carry on investigations in Seward Peninsula during 1911. On returning from the Alatna-Noatak region, however, the writer spent several days in Nome waiting for the steamer. During that time he obtained some notes on the mining industry, and these, supplemented by reports in the technical journals and local papers, and by official correspondence on file in this office, have furnished the basis for the following statements.

PRODUCTION.

The gold production of the peninsula during 1911 was approximately $3,100,000, a decrease of about $400,000 from that of 1910. This falling off is attributable to three main causes—first, a decrease in the amount of winter mining; second, a general decrease in the number of mining operations except dredging; and, third, the handling of low-grade material. All of these causes may be referred more or less directly to the exhaustion of the known rich bonanzas before enterprises capable of handling a large amount of low-grade material cheaply have been established. Practically all placer camps have had a similar history.

In the early years of the development of the ancient beaches at Nome winter mining was important, for labor was cheap, the physical condition of the ground was favorable, and there were many rich areas. Gradually the working out of the richer parts left material of too low a tenor to pay the cost of hoisting and subsequent sluicing in the summer, and consequently this form of mining has decreased. It is estimated that the winter production for 1909–10 was approximately $1,000,000, but during the winter of 1910–11 it dropped to probably about $200,000. That this decrease was more than the decrease in the total of the year was due to the increase in certain of the summer operations, namely, dredging.

In general summer mining work, with the exceptions already noted, fell off considerably, owing to the working out of the known productive areas and the absence of discoveries of new placers that could be mined cheaply by methods not requiring elaborate equipment. No important new strikes were recorded. An attempt to create interest in placers in the extreme eastern part of the peninsula, in the Koyuk basin, was made. Reports from that place, however, do not tend to modify the opinion previously formed—that this region is not particularly promising[1] for extensive placers, though "one-man camps" may be developed there. Dredging, however, became more firmly established and was perhaps the most important feature in the development of the region. Several new dredges were built during the summer, and some of those constructed late in the fall of 1910 first began active work in 1911. The fact that with a lessened production from the winter and other summer mining the total output of gold did not decrease more than $400,000 from that of the previous year is entirely attributable to the increased number of dredges in operation.

The distribution of the gold production among the different Seward Peninsula camps was, in general, similar to that of former years. The Nome region still has the greatest annual output and is far ahead of its nearest competitors, Council and Solomon. Considerable activity in dredge building, however, has been shown by the latter camps, and their production is beginning to show an increase over that of a few years ago, when the bonanza days were past. Owing to a rather wet season, mining was done on several claims in the Kougarok and Fairhaven precincts that have been idle for the last few years. The production from these claims, however, was approximately the same as during previous years. Placer mining was in progress at several other places, but the gold production from these places was relatively small, and was won from previously known deposits that present no unusual features.

TIN DEPOSITS.

Although, as in the past, practically all the mineral production has been derived fom gold placers, interest has been renewed in the tin deposits, and a production of nearly 100 tons of concentrates, worth about $50,000, is reported from tin placers on Buck Creek. This output was obtained by the use of a dredge constructed last summer, so that only a short part of the season was available for mining. It is reported that the dredge commenced running on September 6 and closed by the middle of October. With a full season it should be possible at least to double the production stated above. A general

[1] Smith, P. S., and Eakin, H. M., A geologic reconnaissance in southeastern Seward Peninsula and the Norton Bay-Nulato Inlet region, Alaska: Bull. U. S. Geol. Survey No. 449, 1911, pp. 110, 113.

description of the dredge and a brief account of mining at this place has recently been published by H. G. Peake,[1] who states that 2.85 tons of tin concentrates are obtained each day.

Not only has dredging for placer tin been carried on, but certain lode tin mines near York have been reopened under the superintendence of a competent mining engineer. Although the production was practically negligible, the examination is reported to have shown promising deposits, so that the company proposes to continue development work energetically during next season. No important new features of these lodes are said to have been disclosed by the prospecting. It is understood that it is the company's intention to ship the tin concentrates to Seattle, where they will be smelted.

DREDGING.

As has already been noted, there has been a gradual increase in mining with dredges throughout Seward Peninsula, and a still further growth of this industry is expected. Many of the dredges have been used for prospecting instead of for mining and some have been mishandled, so that nowhere near the theoretical efficiency has been obtained. Experience, however, is being gained and it is a hopeful sign that the big dredge-building firms are sending experienced engineers into the country to study the obstacles that must be overcome. One of the most promising features of this expert investigation was the refusal of a dredge-building company to put a machine on an unsuitable property. If this policy is continued one of the causes of past failures will be removed.

Several articles have recently been published on the dredging industry on Seward Peninsula. The most important of these are by T. M. Gibson[2] and Charles Janin.[3] From these publications and from statements by W. E. Thorpe, a construction engineer of the Yuba Construction Co., and from personal familiarity with the region, the following table, giving certain statistics concerning the dredges in operation during 1911, have been compiled. A few minor discrepancies appear between reports received from different sources, but so far as possible these have been adjusted.

[1] Peake, H. G., Tin dredging in Alaska: Min. and Sci. Press, vol. 103, 1911, p. 652.
[2] Gibson, T. M., Gold dredging industry on Seward Peninsula: Min. and Sci. Press, vol. 104, pp. 45–48.
[3] Janin, Charles, Gold dredging in Alaska and the Yukon: Min. Mag., vol. 6, pp. 45–48.

Dredges in operation on Seward Peninsula in 1911.

Company.	Region.	Creek.	Built.	Type or builder.	Size of buckets (cu. ft.).	Bucket line.	Source of power.	Fuel used a day.	Remarks.
Gold Beach Dredging Co	Nome	Osborn	1905	I. B. Hammond	5	Open	Crude oil	18 bbls	
Nome Consolidated Dredging Co.	do	Bourbon	1908	E. L. Smith-Lidgerwood	9	Close	Electricity	(?)	Power generated from oil.
Do	do	Wonder	1908	do	7	do	do	(?)	Do.
Plein Mining & Dredging Co.	do	Otter	1910	Risdon	3½	Open	Crude oil	13 bbls	
Saunders Dredging Co	do	Saunders	1910	(?)	3½	Close	Distillate	200 galls	
Arctic Gold Dredging Co	do	do	1910	Union Iron Works	2½	Open	do	160 galls	
Sioux-Alaska Mining Co	do	Moss	1910	do	2¼	do	do	do	
Julien Dredging Co	do	Osborn	1911	Union Construction Co	2¾	do	do	190 galls	
Nome Consolidated Dredging Co.	do	Wonder			10		Electricity		Still under construction.
Seward Dredging Co	Solomon	Solomon	1905	Bucyrus	5	Close	Coal	12–15 tons	Formerly the Three Friends.
Sievertsen	do	do		(?)	(?) 1	Open	Distillate	(?)	Built before 1906.
Mulligan	do	West		(?)	(?) 1		do	(?)	Built before 1906; runs on track.
Nome-Montana & New Mexico.	do	Solomon	1908	Risdon	5	Open	Coal	5 tons	Previously at Hope, Alaska.
Solomon Dredging Co	do	do	1910	Bucyrus	3½	Close	do	7 tons	
Flodin Mining & Dredging Co.	do	Big Hurrah	1910	Risdon	2½	Open	do	3 tons	
Sievertsen & Johnson	do	Solomon	1910	do	2½	do	do	do	
Kimball	do	Shovel	1911	Sluice-box type	2½	do	Distillate	150 galls	Similar to Kimball-Saupe dredge on Melsing Creek.
Blue Goose Mining Co	Council	Ophir		I. B. Hammond	5	do	Wood	12 cords	Built before 1905.
Alaska Gold Dredging Co	do	Warm	1909	Byron Jackson	2¼	do	Distillate	160 galls	
Do	do	Goldbottom	1909	do	2½	do	do	do	
Wild Goose Mining & Trading Co.	do	Ophir	1910	Yuba Construction Co	3½	Close	do	300 galls	
Goose Creek dredge	do	Goose	1910						Not in operation.
Alaska Gold Dredging Co	do	Willow	1910	Union Iron Works	2½	Open	Distillate	160 galls	
Kimball & Saupe	do	Melsing	1910	Empire Iron Works	2½	do	do	150 galls	Sluice-box type.
Lubbe	do	Mystery	1911	Union Iron Works	2½	do	do	do	
York Dredging Co	Port Clarence	Buck	1911	Union Construction Co	2¾	do	do	190 galls	
Cripple River Dredging Co	Southwest Seward Peninsular.	Cripple		E. L. Smith-Lidgerwood	(?) 5	(?)	do	(?)	Reported under construction.
Kelliher	Kougarok	Taylor		Union Iron Works	2¾	(?)	do	(?)	To be hauled to Taylor Creek during winter of 1911–12.

It has not been possible to compute accurately the number of cubic yards of auriferous gravel handled by the dredges or the value of the production. Brooks has stated that in 1910 from 1,200,000 to 1,500,000 yards [1] of gravel were dredged, having an aggregate value of $800,000, or an average value between 50 cents and 66 cents a cubic yard. Janin [2] estimated that the dredges in 1911 produced about $1,400,000 in gold. If this estimate is correct and the value per yard remained the same as that given by Brooks for 1910, it follows that between 2,000,000 and 2,800,000 cubic yards were mined by dredges in 1911. To find approximately the number of yards mined, a computation based on the length of the working season and the size of the dredges may also be made. According to Janin most of the dredges started work on or before June 24 and closed about October 24, thus working during a season of 126 days. From the table given above it may be determined that the average size of bucket used on the 23 dredges that were in operation in 1911 was about 3½ cubic feet. On the authority of W. E. Thorpe it may be assumed that the average 3½-foot dredge will handle about 1,200 cubic yards of gravel a day. Using these various factors and allowing for time lost not only in operation, but at both ends of the working season, it follows that over 2,000,000 cubic yards were probably handled by dredges in 1911.

This is by no means the theoretical capacity of even the machines now on the ground, and new ones are being installed every season. There is no reason why a dredging season of 120 days should not be assumed, and many experienced dredge men predict that dredges can be operated through November, so that possibly a season of 150 or more days may be counted on for the larger dredges. When it is realized that even with the present dredge equipment over a quarter of a million cubic yards can be handled each 10 days, the importance of the length of the working season becomes evident.

During 1911 four new dredges, as is shown by the table, page 7, in as many different parts of the peninsula were built and operated. Three new dredges were in the region in various stages of completion and should be in running order by the middle of the open season of 1912. Of these new dredges perhaps the most important is to be installed on Wonder Creek, near Nome. The hull has already been built, and the digging ladder, spuds, and other parts "are being put together in the company's shops [at Nome] this winter, thus occupying the mechanical force which it is necessary to retain under yearly contracts and cheapening cost of construction, together with material freight reductions." [3] This dredge will be equipped with 10-foot buckets, which are larger than any now used in Seward Peninsula. The motive power will be electricity, generated from oil.

[1] Brooks, A. H., The mining industry in 1910: Bull. U. S. Geol. Survey No. 480, 1911, p. 41.
[2] Janin, Charles, Gold dredging in Alaska and the Yukon: Min. Mag., vol. 6, pp. 45–48.
[3] Perkins, W. T., unpublished letter.

LODE DEVELOPMENTS.

Little has been done during the year in developing lodes outside of the tin region. (See p. 341.) None of the prospects except the one on Manila Creek has been exploited, but that general interest in lodes seems to have increased is indicated by the fact that a two-stamp custom quartz mill has been erected near Nome with the object of giving opportunity for testing commercial samples of ore. The mill has been in operation too short a time to show its value, but it is believed that it will prove to be of great service, not only in indicating workable ores, but also in pointing out the leads that are not worth further exploitation. That there are valuable vein deposits in Seward Peninsula is not doubted, and their discovery and development may be greatly facilitated by a commercial test such as the new mill should afford.

The mine on Manila Creek, noted above, is the only one that is reported to have shipped ore during 1911. At this place the ore is mainly stibnite (the sulphide of antimony), carrying accessory values in gold. Specimens from this place have shown native gold in crystalline aggregates associated with the stibnite. Fifteen tons of this ore are said by the local newspapers to have been shipped to the Tacoma smelter and to have yielded $125 a ton. This ore was probably hand sorted before shipping, so that the above returns do not represent the average run of the material. Nevertheless the presence of visible free gold in many of the specimens indicates a high gold tenor and a deposit worthy of full investigation.

Some graphite was sorted and sacked for shipment from near Imuruk Basin. It is understood, however, that the high transportation and treatment charges levied against former shipments have dissuaded the owners from sending out graphite at the present time.

INDEX.

RECENT SURVEY PUBLICATIONS ON ALASKA.

[Arranged geographically. A complete list can be had on application.]

All these publications can be obtained or consulted in the following ways:

1. A limited number are delivered to the Director of the Survey, from whom they can be obtained free of charge (except certain maps) on application.

2. A certain number are delivered to Senators and Representatives in Congress for distribution.

3. Other copies are deposited with the Superintendent of Documents, Washington, D. C., from whom they can be had at prices slightly above cost. The publications marked with an asterisk (*) in this list are out of stock at the Survey, but can be purchased from the Superintendent of Documents at the prices stated.

4. Copies of all Government publications are furnished to the principal public libraries throughout the United States, where they can be consulted by those interested.

GENERAL.

*The geography and geology of Alaska, a summary of existing knowledge, by A. H. Brooks, with a section on climate, by Cleveland Abbe, jr., and a topographic map and description thereof, by R. U. Goode. Professional Paper 45, 1906, 327 pp. $1.

Placer mining in Alaska in 1904, by A. H. Brooks. In Bulletin 259, 1905, pp. 18–31.

The mining industry in 1905, by A. H. Brooks. In Bulletin 284, 1906, pp. 4–9.

The mining industry in 1906, by A. H. Brooks. In Bulletin 314, 1907, pp. 19–39.

*The mining industry in 1907, by A. H. Brooks. In Bulletin 345, pp. 30–53. 45 cents.

The mining industry in 1908, by A. H. Brooks. In Bulletin 379, 1909, pp. 21–62.

The mining industry in 1909, by A. H. Brooks. In Bulletin 442, 1910, pp. 20–46.

The mining industry in 1910, by A. H. Brooks. In Bulletin 480, 1911, pp. 21–42.

The mining industry in 1911, by A. H. Brooks. In Bulletin 520, 1912, pp. 19–44.

Railway routes, by A. H. Brooks. In Bulletin 284, 1906, pp. 10–17.

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Geologic features of Alaskan metalliferous lodes, by A. H. Brooks. In Bulletin 480, 1911, pp. 43–93.

Tin resources of Alaska, by Frank L. Hess. Bulletin 520, 1912, pp. 89–92.

Administrative report, by A. H. Brooks. In Bulletin 259, 1905, pp. 13–17.

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Administrative report, by A. H. Brooks. In Bulletin 314, 1907, pp. 11–18.

*Administrative report, by A. H. Brooks. In Bulletin 345, 1908, pp. 5–17. 45 cents.

Administrative report, by A. H. Brooks. In Bulletin 379, 1909, pp. 5–20.

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Report on progress of public land surveys during 1910, by A. H. Brooks. In Bulletin 480, 1911, pp. 15–20.

Notes on the petroleum fields of Alaska, by G. C. Martin. In Bulletin 259, 1905, pp. 128–139.

The petroleum fields of the Pacific Coast of Alaska, with an account of the Bering River coal deposits, by G. C. Martin. Bulletin 250, 1905, 64 pp.

Markets for Alaska coal, by G. C. Martin. In Bulletin 284, 1906, pp. 18–29.

The Alaska coal fields, by G. C. Martin. In Bulletin 314, 1907, pp. 40–46.

Alaska coal and its utilization, by A. H. Brooks. In Bulletin 442, 1910, pp. 47–100.

The possible use of peat fuel in Alaska, by C. A. Davis. In Bulletin 379, 1909, pp. 63–66.

The preparation and use of peat as a fuel, by C. A. Davis. In Bulletin 442, 1910, pp. 101–132.

*The distribution of mineral resources in Alaska, by A. H. Brooks. In Bulletin 345, pp. 18–29. 45 cents.
Mineral resources of Alaska, by A. H. Brooks. In Bulletin 394, 1909, pp. 172–207.
*Methods and costs of gravel and placer mining in Alaska, by C. W. Purington. Bulletin 263, 1905, 362 pp. 35 cents. Abstract in Bulletin 259, 1905, pp. 32–46.
*Prospecting and mining gold placers in Alaska, by J. P. Hutchins. In Bulletin 345, 1908, pp. 54–77. 45 cents.
Geographic dictionary of Alaska, by Marcus Baker; second edition by James McCormick. Bulletin 299, 1906, 690 pp.
*Water-supply investigations in Alaska in 1906–7, by F. F. Henshaw and C. C. Covert. Water-Supply Paper 218, 1908, 156 pp. 25 cents.

Maps.

Alaska, topographic map of; scale, 1:2,500,000; preliminary edition; by R. U. Goode. Contained in Professional Paper 45. Not published separately.
Map of Alaska showing distribution of mineral resources; scale, 1:5,000,000; by A. H. Brooks. Contained in Bulletin 345 (in pocket).
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Map of Alaska showing distribution of metalliferous deposits, by A. H. Brooks. Contained in Bulletin 480. Not issued separately.
Map showing distribution of mineral resources in Alaska, by A. H. Brooks; scale, 1:5,000,000. Price 20 cents. Also included in Bulletin 520.

SOUTHEASTERN ALASKA.

*Preliminary report on the Ketchikan mining district, Alaska, with an introductory sketch of the geology of southeastern Alaska, by Alfred H. Brooks. Professional Paper 1, 1902, 120 pp. 25 cents.
*The Porcupine placer district, Alaska, by C. W. Wright. Bulletin 236, 1904, 35 pp. 15 cents.
The Treadwell ore deposits, by A. C. Spencer. In Bulletin 259, 1905, pp. 69–87.
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*Lode mining in southeastern Alaska in 1907, by C. W. Wright. In Bulletin 345, 1908, pp. 78–97. 45 cents.
*The building stones and materials of southeastern Alaska, by C. W. Wright. In Bulletin 345, 1908, pp. 116–126. 45 cents.
*Copper deposits on Kasaan Peninsula, Prince of Wales Island, by C. W. Wright and Sidney Paige. In Bulletin 345, 1908, pp. 98–115. 45 cents.
The Ketchikan and Wrangell mining districts, Alaska, by F. E. and C. W. Wright. Bulletin 347, 1908, 210 pp.
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Geology and mineral resources of the Berners Bay region, Alaska, by Adolph Knopf. Bulletin 446, 1911, 58 pp.

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The Eagle River region, by Adolph Knopf. In Bulletin 480, 1911, pp. 103–111.
The Eagle River region, southeastern Alaska, by Adolph Knopf, including detailed geologic and topographic maps. Bulletin 502, 1912, 61 pp.
The Sitka mining district, Alaska, by Adolph Knopf. Bulletin 504, 1912, 32 pp.
The Yakutat Bay earthquake of September, 1899, by R. S. Tarr and Lawrence Martin. Professional Paper 69, 1912, 135 pp.

Topographic maps.

Juneau special map; No. 581A; scale, 1:62,500; by W. J. Peters. Price 5 cents each or $3 per hundred.
Berners Bay special map; No. 581B; scale, 1:62,500; by R. B. Oliver. Price 5 cents each or $3 per hundred.
Topographic map of the Juneau gold belt, Alaska. Contained in Bulletin 287, Plate XXXVI, 1906. Not issued separately.
Kasaan Peninsula, Prince of Wales Island; No. 540A; scale, 1:62,500, by R. H. Sargent, D. C. Witherspoon, and J. W. Bagley. Price 5 cents each or $3 per hundred.
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CONTROLLER BAY, PRINCE WILLIAM SOUND, AND COPPER RIVER REGIONS.

*The mineral resources of the Mount Wrangell district, Alaska, by W. C. Mendenhall. Professional Paper 15, 1903, 71 pp. Contains map of Prince William Sound and Copper River region; scale, 12 miles=1 inch. 30 cents.
Bering River coal field, by G. C. Martin. In Bulletin 259, 1905, pp. 140–150.
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Notes on the petroleum fields of Alaska, by G. C. Martin. In Bulletin 259, 1905, pp. 128–139. Abstract from Bulletin 250.
The petroleum fields of the Pacific coast of Alaska, with an account of the Bering River coal deposits, by G. C. Martin. Bulletin 250, 1905, 64 pp.
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Geology and mineral resources of the Nizina district, Alaska, by F. H. Moffit and S. R. Capps. Bulletin 448, 1911, 111 pp.
Headwater regions of Gulkana and Susitna rivers, Alaska, with accounts of the Valdez Creek and Chistochina placer districts, by F. H. Moffit; including geologic and topographic reconnaissance maps. Bulletin 498, 1912, 82 pp.

The upper Susitna and Chistochina districts, by F. H. Moffit. In Bulletin 480, 1911, p. 127.
The Taral and Bremner districts, Alaska, by F. H. Moffit. Bulletin 520, 1912, pp. 93–104.
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Gold deposits near Valdez, by A. H. Brooks. In Bulletin 520, 1912, pp. 108–130.
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Copper and upper Chistochina rivers; scale, 1:250,000; by T. G. Gerdine. Contained in Professional Paper 41. Not issued separately.
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Nome quadrangle, Seward Peninsula; No. 646B; scale, 1:62,500; by T. G. Gerdine.

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The following maps are for sale at 25 cents a copy or $15 per hundred:

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