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REPORT ON PLATINUM PLACERS SOUTH OF GOODNEWS BAY, ALASKA

by Irving Reed

1931

INTRODUCTION

MR-123-01

The platinum bearing area herein considered lies about four miles south of Goodnews Bay and covers about 25 square miles. This area extends approximately from longitude 161°30' to 161°47'W. and latitudes 58°53' to 59°00' N., and includes the middle portion of Smalls River, draining into Goodnews Bay and the headwaters of Salmon River, which drains into Kuskokwim Bay about 2 miles north of Chagvan Bay. The general characteristics of the country are rather broad northeast-southwest valleys with shorter, steeper tributaries coming in at right angles. The hills and mountains on the side away from the sea are well-worn and rounded. On the seaward side the mountains break away into steep, talus-covered slopes with every evidence of having been subject at one time to active marine erosion.

There have been no previous surveys of this area. Goodnews Bay itself and the region to the north of that body, was surveyed and the geology examined in 1919 by George L. Harrington of the U. S. Geological Survey, with R. H. Sargent as topographer, and the results published in Bulletin 714, pages 207-228. However the country lying more than two or three miles south of the bay was not mapped nor apparently even visited.

The writer was alone on the present reconnaissance. He left Anchorage on June 20, 1931, in a pontoon plane of the Pacific International Airways, landing at Muntrak on Goodnews Bay on the evening of June 21st. On account of the necessity of visiting the

Motorship Moravian off Beluka Peak------ Red Mountain in distance

The village of Muntrak

gold placers of the upper Goodnews River, and because the Moravian Mission boat, the sole means of transportation to Kwinhaget and Bethel, was due to arrive at Muntrak on the one trip of the year on July 4th, only until June 28th could be spent at the platinum placers. The present map was made by means of compass, clinometer, pedometer and aneroid. It is therefore necessarily quite crude. However, it is coordinated in with the preliminary map of the U. S. Geological Survey lying to the north and will serve for reconnaissance purposes until more accurate maps can be made by that organization. The miners at the platinum placers and both whites and natives at Muntrak, did their utmost to help by every means they could. Without this assistance very little could have been accomplished in the short time available.

G E O G R A P H Y

DRAINAGE

The platinum bearing area is drained by the two rivers, Smalls River and Salmon River. Smalls River rises in the comparatively high mountains south and southeast of Goodnews Bay in two forks, the fork flowing from the northeast from the direction of Crater Hill and Pyramid Mountain appearing from a distance to be much the larger. After the confluence of the two forks, Smalls River flows a little south of west to McCann Creek where it turns almost due north for about three miles to its confluence with Tundra Creek. It then turns west again, meandering in a shallow flood valley across a slightly rolling gravel plain to the southwest cornerof Goodnews Bay. Salmon River rises in a small lake about 3/4 mile south of the middle portion and 1 mile west of the confluence of the two forks of Smalls River. It then flows a little west of south to about 2 miles north of Chagvan Bay where it enters Kuskokwim Bay. The largest tributary of Smalls River is Fundra

Whuya Mountain from Platinum Creek

Susie Mountain from left limit of Boulder Creek

Creek, arising in the gravel plain which borders Goodnews Bay on its south side, and receiving the drainage from the northerly face of the hills to the south. The largest tributary of Salmon River is Medicine Creek, rising in the hills east of Susie Mountain and flowing southwest to join Salmon River just south of Salmon Bluffs.

RELIEF

The relief in the area is dominated by two mountains, Red Mountain and Susie Mountain, both rising to about 2,000 feet in elevation. On its western or seaward side, Red Mountain breaks off abruptly in a steep talus slope to a flat marshy coastal plain about 3/4 mile wide and continuous with the lowland plain surrounding Goodnews Bay. The landward side of Red Mountain and other mountains and hills in the area, show well-worn and rounded outlines. The main streams flow in rather wide, mature valleys with very little gradient.

GLACIATION

At present there are no glaciers in the area nor within this part of Alaska so far as known. However, in ages past a glacier occupied all the upper valley of Smalls River. High gravel banks of outwash material lie all along the left limit of the river below McCann Creek and many small lakes and potholes are high up on the hill on the right limit opposite and above McCann Creek. What appears from a distance to be an old moraine lies just below the confluence of the two forks. Salmon River has not been glaciated so far as could be told. However it is thought that, from the appearance of old high channels leading south from Smalls River, part of the discharge water from the Smalls River glacier flowed down Salmon River.

E C O N O M I C S

POPULATION

The population of the whole Goodnews Bay region south of

the Arolic River to Chagvan Bay consists of 17 whites and approximately 50 natives. Of the whites 13 were working in the platinum placers.

TRAVEL AND TRANSPORTATION

Airplanes (with pontoons in summer and skiis in winter) make regular mail trips from Anchorage every week to Bethel on the Kuskokwim River alternately by way of Nushagak and Tacotna. Arrangement can be made with an airplane company for stopping at Muntrak, a small native village with 2 stores, on the north shore of Goodnews Bay. A small ocean-going steamer makes 2 trips every summer from Seattle to Bethel with freight and passengers. Otherwise a traveller may go down the Tanana and Yukon from Nenana to Russian Mission, there take passage on the mail launch across the Yukon-Kuskokwim portage and down the Kuskokwim to Bethel. From Bethel, unless passage on some private sailing boat of the natives can be secured, the only means of transportation is the Moravian mission diesel-motor schooner, Moravian, which generally makes a trip to Goodnews Bay once each summer. In winter, besides airplanes, the only means of travel is by dogteam. There are no accomodations for travellers at Muntrak. Arrangements have to be made with the miners or natives for stopping in private homes.

Most of the freight is brought from Bethel to Muntrak by the M.S. Moravian. Besides this many of the miners and natives transport in good weather, small amounts of freight from Bethel in Columbia River fishing boats. Small lots of freight are also brought to Muntrak by dogteam. Freight, with the exception of perishables in summer, is transported from Muntrak to the platinum placers altogether by dogteam.

CLIMATE

The climate of the platinum area is raw and foggy in

summer, though the actual rain-fall is not great. However, driving mists and light showers are of frequent occurence. Even when weather conditions are excellent at Mustrak, mist and fog obscure Red Mountain. The winters, compared with Interior Alaska, are fairly mild. They alternate between cold weather with snow, and warm periods when the snow partially or entirely melts. The ice in Goodnews Bay is extremely unreliable, being liable to be broken up at any time by the tide and to move up and down in the bay or out to sea. The sea ice rarely freezes solid but moves up and down the coast with the tide. High winds prevail at all times and at all seasons of the year. All of the above conditions make dogteaming very hazardous and add greatly to the difficulties of the miners and prospectors.

VEGETATION

A thin blanket of grass and moss covers the country south of Goodnews Bay. One misses the deep layers of moss and decayed vegetation of the tundras further north. No typical tundra was seen. Much bare rock and slide are exposed on the mountains. However, good footing for man or horses seems to prevail everywhere. There is no spruce or cottonwood timber. On Smalls River above Tundra Creek and on Salmon River below Clara Creek is a narrow strip of stunted willows which may be used after drying as a poor substitute for fuel.

ANIMAL LIFE

Ptarmigan in quite considerable numbers and a few hares are the only resident edible wild life in the region. Innumerable ducks, geese, gullsand shorebirds nest in the summer around Goodnews Bay or pass through on their annual migrations. A constant supply of fresh meat may be bought from the Eskimos owning the many reindeer herds which roam all over the Goodnews Bay region. Fither salmon, smelt or herring, can be taken at almost any time or season in

Goodnews Bay. The Eskimos hunt both seal and walrus in the winter on Kuskokwim Bay, generally from the South Spit. Of the fur bearers, red fox are the most numerous. White fox are occasionally caught. Parka squirrels are relatively scarce. A few mink and otter are also taken during the season. Mosquitos and flies, because of the high prevailing winds, are almost non-existent.

G E O L O G Y

GENERAL OUTLINE AND CHARACTER OF ROCKS

In the platinum bearing area of Goodnews Bay the igneous rocks, with the exception of one small area, range from basic to ultrabasic. The original magma seems to have been of the ultra basic type, and the difference in types of the igneous rocks seems to be due to magmatic segregation and differentiation. The various types seem to have a rough zonal arrangement around Red Mountain and are not due to separate intrusions. They become very finely crystalline to almost porphyritic near what is concluded to have been the original contact with the overlying sedimentaries. The small area of granitic rock at the head of McCann Creek seems to have been in the nature of a salic border zone along the aforesaid contact. The small block of sedimentary beds at the head of Salmon River is an island, pendant or inclusion in the basic magma. It is highly metomorphosed on the edges where seen at the one exposure in the bed of Clara Creek. The beds themselves are weathered on the surface and so covered with soil that it is very hard to locate actual contacts or even out-crops. The valley of Smalls River is covered by glacial outwash material, gravel banks 75 feet high rising along the left limit of the river below McCann Creek. The flats facing Goodnews Bay seem to be composed entirely of "unconsolidated deposits of alluvial,

glacio-fluviatile, and marine origin." Part of the unconsolidated deposits in the bed of Salmon River may be also of glacial outwash origin. No age determinations were made nor were any fossils found in the sedimentary beds. The age of the sedimentary beds has been assumed to be the same as similar beds north of Goodnews Bay, which were thought by Harrington to be mesozoic. The igneous rocks are younger than the sedimentaries, as the former were intruded into the latter, and are possibly late mesozoic or early cenozoic. In the short time available it was impossible to trace out all the boundaries of the different igneous rocks. Whereunknown, such boundaries are left as blank spaces on the map.

STRUCTURE

The same northeasterly-southwesterly trend of the rocks, as noted by Harrington north of Goodnews Bay, also prevails south of the bay. Both north and south of the bay the general direction of the valleys seems to be northeasterly-southwesterly. For instance, the valley of Salmon River and parts of the valley of Smalls River lie about N.15°E. Harrington considered the structure of Goodnews Bay to be synclinal, with the western axis exposed along the bay and the eastern axis, possibly, at Cape Newenham. Assuming this very reasonable hypothesis to be correct, the western axis of the above syncline must be much complicated by faulting and minor folding along the above northeasterly direction. Present drainage lines would be determined by this faulting and minor folding. The suggestion is hereby made that these two last movements occurred during and after the intrusion and probably, in places, extrusion of the basic igneous rocks. Thus the valleys of Salmon and Smalls Rivers would lie in zones of movement which occurred after the intrusion of the basic

rock into the overlying sedimentaries.

SEDIMENTARY ROCKS

The small block of sedimentary rocks at the head of Salmon River and on the left limit of Clara Creek constitutes, as said before, an island, pendant or inclusion settled into the original magma. It was only seen in place in two outcrops, one on the left limit of Clara Creek near the top of McCann Creek divide at an elevation of 540 feet. Here the rock was a light grey to bluish green quartzite, easily mistaken in hand specimens for an igneous rock. The other outcrop was on or very near the contact uncovered by mining in the bed of Clara Creek on Discovery Claim. Here the rock was a slate or argillite altered to a light grey schist. No outcrops were seen on top of the hill on the left limit of Clara Creek, as it was covered with detritus, but float was found that could have traveled only a few feet. The dip of these beds could not be ascertained and if it had been, it would not necessarily have had any relation to the dip of the original beds in place, so would have been of no value. The age of these beds is undoubtedly the same as that of the sedimentary beds north of Goodnews Bay which Harrington assumed, tentatively, to be mesozoic.

IGNEOUS ROCKS

The great majority of igneous rocks on Red Mountain and Susie Mountain are holocrystalline and ultrabasic in character, consisting of dunite, pyroxenite, hornblendite and peridotite, in some places altered to serpentine. The north slope of Boulder Hill on the right limit of Boulder Creek consists of a medium basic rock corresponding to a diorite. Rock of the same kind outcrops at the head and on the left limit of Clara Creek, though it apparently does not cross the creek. On the left limit of Platinum Creek from its

head to below Fox Creek, is another narrow strip of the same dioritic rock. This apparently has no connection with the diorite on Boulder Creek as no diorite is found in the bedrock of Dry or Squirrel Creeks.

At the heads of Clara Creek and Boulder Creek, in the bed of Squirrel Creek above the bend, above the head of Dry Creek and at the bend of Fox Creek, is a dark basic rock corresponding to a gabbro. North of Contact Creek and the sedimentary beds, diorite, gabbro and peridotite occur but their true relationship is hard to work out because the surface is covered with detritus and glacial outwash material. On the divide between McCann and Clara Creek is a small area of acidic rocks, either a granite (granitite) or quartz diorite. This last type of rock may be a separate intrustion, complementary dike, or, more probably, a more acidic part of a salic zone.

The basic rocks all belong to the same intrusion. Difference in composition is due to magmatic segregation and differentiation. On the steep denuded seaward side of the pass at the head of Platinum Creek, there is no sharp demarkation point but a gradation from diorite to the much darker ultrabasic rocks. This same gradation can be seen on the right limit of Boulder Creek where diorite changes to peridotite on the south and to gabbro on the west. The gabbro then in turn changes to peridotite still farther to the west. The theory is advanced that this arrangement is zonal; that, originally, the less basic rocks, in some places even acidic, lay next to the contact with the sedimentaries; that the rocks became more basic towards the interior of the laccolith due to magmatic differentiation; also, that the ultrabasic rocks themselves have a more or less zonal arrangement due to magmatic segregation of the basic iron-magnesium minerals themselves. The relationship of the igneous rocks of Red and Susie

Mountains to the "mesozoic basaltic intrusions, flows, and tuffs" of Harrington is not clear. The basic rocks to the north of Goodnews Bay, which were examined in the field, appeared to weather darker and to be finer grained than those in the platinum bearing area. It is thought, however, that they all belong to the same period of intrusion, but that most of the basaltic rocks bordering and north of Goodnews Bay, represent originally surface or near-surface flows.

UNCONSOLIDATED DEPOSITS

The unconsolidated deposits of Smalls River consist of glacial outwash material. As mentioned before banks as high as 75 feet of this outwash are exposed on the left limit of the river below McCann Creek. The material seems to be well water-worn and fairly well sorted. Most of the gravel in Salmon River appears to be ordinary river wash, though it is thought that some of it may be in part glacial outwash material. It is all rather fine and with few boulders. The gravel in the creeks is surprisingly fine even near their heads, probably because the peridotitic rocks have a tendency to disintegrate on weathering rather than to slab out into boulders. Only towards the heads of Squirrel and Boulder Creeks are there many large boulders. The whole of the Goodnews Bay country is south of the frost-line, and all unconsolidated deposits are unfrozen.

QUATERNARY AND RECENT HISTORY

Following a geological history outlined by Harrington, and in which the writer concurs, at the close of the Pliocene, all of the Goodnews Bay region was several hundred feet higher than it is at present. The ocean front of the mountains had by this time been cut back to almost its present position though the actual shoreline may have been several miles to the westward. Goodnews River then ran in a

wide valley where now is Goodnews Bay. Salmon River then headed about where the main or north fork of Smalls River is at present, accounting for the wide flat valley of such a small stream as the present Salmon River. The head of Smalls River was approximately about where McCann Creek now runs. At the beginning of the Pleistocene, erosion had reduced the high relief to a mature topography. There was at that time a very low divide between the then head of Smalls River and some short right limit tributary of the then middle part of the upper end of Salmon River. The glacier coming down Smalls River to join the main glacier in Goodnews Bay either cut this divide out or actual robbery had occurred before glaciation and Smalls River had practically its present form. During the advances and retreats of the glacier, this valley of Smalls River was deepened and enlarged. Salmon River undoubtedly received part of the discharge water from the glacier and may even have had a small tongue of ice in its upper portion. At the period of maximum glaciation the land seems to have stood at a lower level than now, the subsidence being, according to Harrington, over 300 feet. Accepting the above figures as substantially correct, the base of the Smalls River glacier must have been well below sea-level while an arm of the sea extended from the vicinity of what is now Chagvan Bay far up Salmon River. The steep seaward face of Red Mountain must have been a sea cliff against which the sea cut directly. The glacier in Goodnews Bay must have been discharging directly into the sea, very similarly to Muir Glacier at the present time. Probably after the end of the period of maximum glaciation, there was a gradual emergence up to and including the present time. Smalls River valley was after the retreat of the ice filled with glacial outwash and the waters of the upper portion may have again discharged down Salmon

River as the fresh evidences of old river channels at its head would indicate. However the much steeper grade of Smalls River combined with more easily worked material in its bed, would have tended soon again to rob Salmon River of its headwaters, and the drainage assume its present lines.

E C O N O M I C G E O L O G Y

HISTORY OF MINING AND DISCOVERIES

Probably many men have been through the area south of Goodnews Bay. However as they were looking for gold and as the general type of rock is so different ~~than~~ from that usual in a gold-bearing country, no prospecting was done. If any holes were sunk or panning done, the platinum was mistaken for iron pyrites and discarded. In the fall of 1926 an Eskimo named Walter Smith told another native named Henry Whuya, that he had found white gold at the mouth of what is now Fox Gulch. Henry Whuya in his turn then told Charles Thorsen, an old-time white miner about this find. Thorsen, being curious to know what this white gold was, crossed to where Whuya had found it and panned in the creek bed. Though familiar with platinum from the small amounts obtained in gold mining operations on the Arolic River, he did not recognize the greyish metal panned at this place, principally because it was rough and dendritic instead of in small rounded shots. However he found it was malleable (and therefore presumably metallic) by biting on a small nugget. He then sent his panning's to Paul Hopkins, Bureau of Mines analytical chemist and minerologist, at College, Alaska, who pronounced it high-grade platinum.

Edward St. Clair was the first person in the spring of 1928 to discover platinum on Squirrel Creek. Chas. Thorsen discovered platinum on Clara Creek in 1928, naming it after his adopted daughter.

DESCRIPTION OF VARIOUS CREEKS AND MINING DEVELOPMENT

McCANN CREEK

This creek is a small left limit tributary of Smalls River heading against the head of Clara Creek. The four claims on it are owned by Edward McCann. Very good platinum prospects have been found on McCann Creek though it is not known whether the values are in paying quantities. The owner was ill in 1931 and unable to continue prospecting. The creek is a very small, steep-graded stream with a valley not over 50 feet wide between rims, so the amount of yardage of workable placer ground would be limited.

CONTACT CREEK

This creek is a small right limit tributary at the head of Salmon River. As it probably lies on the northern contact of the igneous and sedimentary rocks, it probably carries values. No one holds any claims on this creek nor has it been prospected. The yardage would be small.

SUSIE CREEK

This creek is a left limit tributary near the head of Salmon River above the mouth of Clara Creek. Fair platinum prospects have been found by panning the rims near the head of this creek. No further prospecting was done, nor does anyone hold any claims, so far as known, on this creek.

CLARA CREEK

This creek is one of the main producers of the district. The valley is approximately 1¾ miles long to the main forks. Platinum in paying quantities is found from the mouth to within about 600 feet of the forks. From the mouth to No. 2 Above Discovery Claim, or for about 1¼ miles, the valley averages about 300 feet wide between rims.

Up Clara Creek from Haralsen and Wicklund cabin

Down Clara Creek from Haralsen and Wicklund cabin

The depth to bedrock ranges from 5 feet on Discovery Claim, 1/2 mile from the mouth of the creek, to 9 feet on No. 2 Above Discovery. Above No. 2 Above Discovery the right limit rim becomes very poorly defined, the creek hugging the left limit rim. On No. 3 Above Discovery claim the depth to bedrock increases to 10 feet, and on No. 4 Above Discovery the depth to bedrock is about 13 feet.

The only mining method used on the creek is ground-sluicing and shovelling-in. On Discovery claim, Charles Thorsen and Andrew Olson, since starting in the summer of 1928, have cleaned about 19,000 square feet of bedrock. Seven ordinary 10 and 12 inches by 10 inches sluice boxes with steel-shod wooden riffles are used, set on a grade of 7 inches to 12 feet. About 1½ feet of decomposed schistose bedrock is mined. Almost all the platinum lies in this bedrock. The gravel is fairly coarse and angular but with no boulders.

On No. 1 Above Discovery claim, Martin Garthe has cleaned about 2000 square feet of bedrock. Depths to bedrock range from 6 feet on the lower end of the claim to 7 feet on upper end of claim, consisting of 4 to 5 feet of sod and soil and approximately 2 feet of gravel. He ground-sluices off the sod and soil, shovelling-in the gravel. Ordinary sluice boxes and riffles are used on a grade of 7 inches to 12 feet. The grade of the surface from Garthe's open cut to Thorsen and Olson's open cut is 1.82 per cent.

On No. 2 Above Discovery Claim, O. J. Sampson has cleaned 11,000 square feet of bedrock, being in partnership during most of the years 1929 and 1930 with Martin Garthe. The depths to bedrock range from 7 feet on the lower end of the claim to 9 feet on the upper end, consisting of 7 feet of sod and soil and 2 feet of gravel. Only gravel is shovelled-in, the sod and soil being ground-sluiced off. Ordinary sluice boxes and riffles are used, set on a grade of 7 inches to

12 feet. The grade of the surface from Sampson's cut to Garthe's cut is 1.94 per cent.

On No. 3 Above Discovery Claim, John Haralsen and August Wicklund have cleaned 14,240 square feet of bedrock. The depths to bedrock range from 9 feet on the lower end of the claim to 11 feet on the upper end. Where the mining is being done, the depth is 10 feet, consisting of 1½ feet of sod, 7 feet of gravel and 1½ feet of gravel and heavy sediment carrying the platinum values. Only the lower 1½ feet are shovelled-in. The rest of the overburden is boomed off. The bedrock is serpentine and peridotite and is decomposed for at least 5 feet. The bedrock carries no values and is not mined. Five ordinary 10 inches by 10 inches sluice boxes, with 2-inch steel shod wooden riffles are used, set on a grade of 8½ inches to 12 feet. The grade of the surface from the Haralsen and Wicklund cut to Sampson's cut is 2.94 per cent.

On No. 4 Above Discovery Claim, the depth to bedrock increases to about 13 feet at the center of the claim then begins to rapidly lessen. Haralsen and Wicklund have determined by drilling with a pipe that ground high enough in values to mine extends about one-third the length of the claim above its lower boundary. Boulders on the surface and in the creek bed become very numerous on the upper half of the claim.

The width of the paystreak on Clara Creek has never been actually determined. What mining has been done is in the creek bed itself where water for ground sluicing could be obtained easiest. The amount of water in Clara Creek varies from 10 to 40 miners inches, averaging about 20 miners inches.

The platinum of Clara Creek carries with it about 7 per cent by weight of osmiridium. About 1 per cent by weight of the

Lower Dowry Creek and Salmon River. The mountain on the left is Susie Mountain, the gap to the right is valley of Medecine Creek.

Salmon Bluffs from left limit of Boulder Creek

cleaned product is gold. The miners receive no return on this gold from the smelters. The concentrates consist of about 75 per cent of magnetite and 25 per cent of chromite. Much fine platinum is left in the concentrates, also much is lost by the crude methods of mining. It is safe to say that from 25 to 50 per cent of all values are lost in blowing the clean-up, and in mining. The smelters make a five dollar an ounce smelting charge in paying for any lots sold to them.

The ownerships of Clara Creek are as follows:

No. 2 Below Discovery Claim- - - - - - - -Charles Thorsen KA123-2

No. 1 Below Discovery Claim- - - - - - - - O. J. Sampson

Discovery Claim- - - - - - - - - - - - - - - Charles Thorsen KA123-10

No. 1 Above Discovery Claim- - - - - - - - Martin Garthe KA123-6

No. 2 Above Discovery Claim- - - - - - - - Wm. B. Moeck and Fred. Wolter

No. 3 Above Discovery Claim- - - - - - - - Wm. B. Moeck and Fred. Walters

No. 4 Above Discovery Claim- - - - - - - - Oddie Halson

DOWRY CREEK KA123-2

This creek is a small right limit tributary of Salmon River about 3/4 miles below Clara Creek. The width of the valley of Dowry Creek between rims is about 200 feet at the mouth of the creek. However this width rapidly narrows. The grade of the creek is very steep at its upper end, but is only about 2 per cent near the mouth. Workable values in platinum have been found on Dowry Creek. However, due it is said, to lack of men in the district, no actual mining has been done. The amount of water available for mining would be small, the maximum probably not being over 30 miners' inches. Two claims are held on Dowry Creek by Fred Wolters and Neil Corrigal.

BOULDER CREEK KA123-3 123-16

This creek is a small right limit tributary of Salmon River about 1¼ miles below Dowry Creek. At the mouth of Boulder

Looking up Squirrel Creek from mouth

Looking up Squirrel Creek from Thompson's cabin

Creek, its valley is about 75 feet wide between rims. The grade is very steep, the fall from the head of the creek to the mouth being about 360 feet. There are many boulders on the creek from the diorite outcrops on the right limit. Workable values of platinum are said to have been found on Boulder Creek. Two claims, Discovery Claim and No. 1 Above Discovery, are held on Boulder Creek, both by George Wickert.

There are three other unnamed small creeks or gulches between Boulder and Clara Creeks. Though small, these are very favorably situated for platinum mineralization. No work has been done on them so far as is known, nor so far as known, does anyone hold claims on them.

SQUIRREL CREEK 133-2

This creek is really the right fork of Platinum Creek being about the same length as the latter above their confluence. Squirrel Creek is about 1½ miles long to its forks. Of this distance about 0.9 mile has been proven to carry sufficient platinum values to be workable. It is said, and from all indications it should be true, that workable values continue up the creek for 1/4 mile further. Squirrel Creek roughly parallels Boulder Creek for the first 0.6 mile below the forks, then the valley swings to the south, roughly paralleling Salmon River for 0.9 mile to the mouth. At the upper end of No. 3 Below Discovery Claim, the valley of Squirrel Creek between rims, is about 600 feet wide. This width narrows abruptly to 300 feet at the bend on No. 1 Below Discovery claim, 0.9 mile from the mouth. Squirrel Creek carries from 40 to 200 miners inches of water, averaging around 80 miners inches.

Near the mouth of Squirrel Creek on No. 3 Below Discovery Claim, Wm. B. Moeck and Fred Wolters have cleaned about 2200 square feet of bedrock by booming off the overburden and shovelling-in what

gravel could be reached above water level. The depth to bedrock is 9 feet. At 5 feet there is a concentration of platinum, and then another concentration just above bedrock. However there are good values all through the gravel besides these concentrations. The values have been established by drilling with a pipe. The section to bedrock is 2 ft. of sod, 2½ feet of gravel, 1/2 foot of concentration, 3½ feet of gravel, 1/2 foot of concentration, bedrock. The gravel is fairly fine with no boulders, the largest pebble being not over 4 inches in diameter. In the mining operations so far, the upper concentration is the only one the operators have been able to reach, though the drain being constructed a short ways down Platinum Creek, may enable them in 1932 to reach the lower concentration. Ordinary 10-inch by 12-inch sluice boxes are used with wooden riffles. Six boxes are set up on a grade of 7 inches to 12 feet.

On the lower end of No. 2 Below Discovery Claim, Edward "Gaston" St. Clair has cleaned about 12,000 square feet of bedrock by ground-sluicing and shovelling-in. The section to bedrock is 2 feet of moss, grass and sod, 5 feet of small boulders and gravel. The bedrock is a pyroxenite. The platinum lies immediately on or in the upper part of bedrock, a two-foot section of which is mined. The boulders are small and easily handled, none being over 1½ feet in diameter. The grade of the surface from St. Clair's open-cut to Moeck and Wolter's open-cut is 2.23 per cent. Ordinary 10-inch by 12-inch sluice boxes are used with wooden riffles. Seven sluice boxes are set up on a grade of 8 inches to 12 feet.

On No. 1 Below Discovery Claim, Tupper Thompson has cleaned about 8,000 square feet of bedrock by shovelling-in. The depth to bedrock is 6 feet, practically all gravel and boulders. The

Down Squirrel Creek from Squirrel-Boulder Divide

Down Squirrel Creek from Thompson's cabin

bedrock is peridotite, pyroxenite, pyroxenite tending to gabbro and gabbro, and is much decomposed in places. The platinum lies directly on the bedrock. About 1 foot of bedrock is mined with the gravel. On the lower end of No. 1 Below Discovery Claim, the boulders become larger and more numerous, ranging on the upper end of the claim from 1 foot to 4 feet in diameter. The grade of the surface from Thompson's open-cut to St. Clair's open-cut is 5.66 per cent. Ordinary 10-inch by 12-inch sluice boxes are used with steel shod wooden riffles. Seven boxes are set up on a grade of 9 inches to 12 feet.

No mining has been done on Discovery Claim or No. 1 Above Discovery Claim. It is said, however, that returns from drilling with a pipe has indicated high enough platinum values to justify shovelling-in. The boulders decrease in size on No. 1 Above Discovery Claim, though the size and angularity of the pebbles in the gravel show a marked increase, slabs and slide pieces up to 1 foot long being common. The grade from Thompson's open-cut to the bend on Squirrel Creek on the lower end of Discovery Claim is 6.64 per cent. From the bend of Squirrel Creek to the forks, the grade is 6.96 per cent.

Most of the values on Squirrel Creek are caught in the first two boxes. 10 per cent by weight of the values recovered on Squirrel Creek is osmiridium. There is about $10 in gold to 100 ounces of platinum metals in the shipped product. The miners get no returns from the smelters for this gold.

The width of the paystreak on Squirrel Creek is unknown. The main pay as indicated by drilling probably follows in the center of the valley, especially above St. Clair's open-cut. Most of the mining has been done where water was most easily obtained in the bed of the stream, which hugs the left limit of the valley. Probably from

Looking up Thompson's Cut

Looking Down Thompson's cut

25 to 50 per cent of the platinum is lost by the miners as on Clara Creek.

No. 1 Above Discovery Claim is held by Gil McIntyre.

Discovery Claim is held by Gil McIntyre.

No. 1 Below Discovery Claim is held by Gil McIntyre.

No. 2 Below Discovery Claim is held by Jos. Jean and Ed. Smith.

220-foot fraction between No. 2 Below Discovery and No. 3 Below Discovery Claim is held by Edward St. Clair.

No. 3 Below Discovery Claim is held by Fred Wolters.

PLATINUM CREEK

This creek is the largest right limit tributary of Salmon River in the platinum bearing area. It is about 0.6 mile from the mouth of Platinum Creek to the confluence with Squirrel Creek. From there the creek is about 1½ miles long. The valley of Platinum Creek is fairly uniform in width, being about 2000 feet wide below the mouth of Squirrel Creek and about 1500 feet wide across the pass at the head leading to Kuskokwim Bay. The actual width between rims has never been ascertained but is probably not over 800 feet below the mouth of Squirrel Creek, nor 500 feet between Squirrel Creek and Fox Creek.

In 1931, no one was mining on Platinum Creek itself, the miners formerly there going to the more easily worked placers of Clara Creek.

On the lower end of Discovery Claim, Geo. Wickert in 1929-1930, cleaned 9000 square feet of bedrock.

On the middle section of Discovery Claim, Charles Thorsen in 1927 cleaned 2000 square feet of bedrock.

The depth to bedrock on Discovery Claim just below the mouth of Fox Creek is 5 feet. Below the mouth of Squirrel Creek the

Up Platinum Creek from mouth of Squirrel Creek ---- cabin in center is on right limit of Dry Creek.

Looking down Platinum Creek from mouth of Squirrel Creek

depth to bedrock is 10 feet, being too deep to work by present methods. From the mouth of Platinum Creek to the confluence with Squirrel Creek, the grade is 1.39 per cent. From the mouth of Squirrel Creek to the mouth of Dry Creek the grade is 2.16 per cent. From the mouth of Dry Creek to the mouth of Fox Creek the grade is 1.55 per cent. From the mouth of Fox Creek to the head, the grade is 6.96 per cent.

The gravel in Platinum Creek is medium coarse up to the mouth of Squirrel Creek, the largest stones in it probably not being over 3 inches in diameter. Above the mouth of Squirrel Creek , the size and angularity of the stones in the gravel increased until at the mouth of Fox Creek, many of the stones and slabs in the gravel range from 6 to 18 inches in size. Above the mouth of Squirrel Creek, the water in Platinum Creek ranges from 40 to 300 miners inches, the average being probably around 100 miners inches.

No. 1 Above Discovery Claim is held by Gil McIntyre.

Discovery Claim is held by Chas. Thorsen.

No. 1 Below Discovery Claim is held by Chas. Thorsen.

No. 2 Below Discovery Claim is held by Chas. Thorsen.

No. 3 Below Discovery Claim is held by Wm. B. Moeck and Fred Wolters.

No. 4 Below Discovery Claim is held by Walter Smith.

No. 5 Below Discovery Claim is held by Henry Samuelson.

DRY CREEK K+123-1

This creek is a small left limit tributary of Platinum Creek above Squirrel Creek. The creek lies almost entirely within the valley of Platinum Creek and is really just a run-off swale or gulch. It has a steep grade on its upper end but is fairly flat for the last 1/4 mile above the mouth. The width of the paystreak is unknown on Dry Creek because of the small amount of work done on the creek. It appears from the surface, however, that the distance between rims cannot be

over 150 feet.

On the lower end of Discovery Claim, Jos. Chanie and Edward McCann cleaned, in the summer of 1930, about 1200 square feet of bedrock by shovelling-in.

On No. 2 Below Bench Left Limit of Platinum Creek Claim, Charles Tonietzko and John Bennett were building in the summer of 1931 a ditch from Platinum Creek, and were expecting to have cleaned in the combined summers of 1930 and1931 about 8,000 square feet of bedrock. The depth to bedrock on Dry Creek is 5 feet. The gravel is angular and medium coarse, the largest stone seen not being over 10 inches in diameter. The pay lies all through the gravel, though the greatest amount is just above bedrock. About 1 per cent of the final returns on Dry Creek is osmiridium. It is reported that there is no gold in the cleanups.

Discovery Claim is held by Jos. Chanie.

No. 2 Below Bench, Left Limit of Platinum Creek Claim is held by Chas. Thorsen.

FOX CREEK

This creek is a small left limit tributary of Platinum Creek above Dry Creek. Fox Creek is a narrow steep gulch, the pay-streak being only 6 to 10 feet wide. The depth to bedrock below the bend is about 6 feet, of which 3 to 3½ feet are groundsluiced off and the lower 1½ to 2 feet shovelled-in. The gravel on Fox Creek is very angular and coarse. Many boulders occur up to 3 feet in diameter and much bedrock is exposed. The water in Fox Creek probably averages 40 miners inches. The grade of Fox Creek from the mouth to the bend is 5.22 per cent. From the bend to the head the grade is approximately 19 per cent.

On No. 2 Above Discovery Claim, some natives in 1927 to

1929, cleaned 500 square feet of bedrock. The depth to bedrock was about 4 feet, all of which was shovelled-in.

On Discovery Claim, Neil H. Corrigal in 1929 and 1930, cleaned 3500 square feet of bedrock. Seven ordinary 10- and 12-inch by 10-inch sluice boxes were used, set on a grade of 8 and 10 inches to 12 feet. About 33 1/3 per cent of the cleaned returns [illegible] osmiridium. It is reported there is no gold in the cleanups.

Discovery Claim at the mouth of Fox Creek is held by Andrew Olson.

No. 1 Above Discovery Claim is held by Gil McIntyre.

No. 2 Above Discovery Claim is held by Gil McIntyre.

SALMON RIVER

This river is the main stream receiving most of the drainage of the Goodnews Bay platinum bearing area. No mining has been done on Salmon River as the depth to bedrock is too great to mine or even prospect with the present crude implements used in the country.

On No. 16 Above Discovery Claim, opposite Susie Mountain, Haralsen and Wicklund drilled one hole with a pipe in the middle of the valley. The depth to bedrock was 17 feet. No values were found.

On No. 7 Above Bench on the Left Limit Claim, Haralsen and Wicklund drilled 17 feet with a pipe. No bedrock was found. It is said the ground showed prospects in platinum all the way down.

On the line between No. 3 Above Discovery and No. 4 Above Discovery Claims, Moeck and Wolters drilled 6 holes with a pipe. In the first 3 holes on the left limit, bedrock was reached at 6 feet. In the fourth hole near the creek, bedrock was not reached at 22 feet. In the fifth hole towards the right limit bedrock was not reached at 33 ft. In the last hole towards the right limit there was no bedrock at 18 feet. The gravel was very fine at this place, but very compact, down to 10 feet in depth.

Very good platinum prospects (up to 1½ grains) and a little gold are said to have been found in this upper 10 feet. Below 10 feet as far as drilled, the gravel was very loose so did not hold values. Nevertheless light platinum prospects are said to have been found.

No prospecting so far as could be ascertained, has been done on Discovery Claim on Salmon River, at the mouth of Platinum Creek.

On No. 1 Below Bench on the Left Limit Claim, Moeck and Wolters drilled one hole 11 feet deep but did not reach bedrock. It is said that after 3 feet from the surface, fine platinum prospects with a little gold were found in this drill-hole.

On No. 4 Below Discovery Claim, Moeck and Wolters drilled one hole 10 feet deep with no bedrock. It is said coarse platinum prospects were found in this hole.

Salmon River has been staked from No. 16 Above Discovery to No. 17 Below Discovery Claim. Almost all the owners on the various other creeks hold claims on Salmon River, Gil McIntyre being the principal owner.

Salmon River is about 1000 feet wide between rims at the mouth of Platinum Creek. The stream itself at this place in June was about 30 feet wide and 1/2 foot deep.

At Salmon Bluffs, Salmon River between rims, narrows to about 600 feet, the stream being about 15 feet wide.

At the mouth of Dowry Creek, the river valley widens to about 1000 feet between rims, then narrows again rapidly above the mouth of Clara Creek though still about 500 feet wide at the head. The grade of Salmon River Valley from the mouth of Platinum Creek to the mouth of Boulder Creek is 0.5 per cent. From the mouth of Boulder Creek to the mouth of Clara Creek the grade is 0.62 per cent. From the mouth of Clara Creek to the head of Salmon River the grade is 0.93 per cent.

MEDICINE CREEK

This creek is the largest tributary on the left limit of Salmon River in the platinum bearing area. The amount of water in Medicine Creek is about 1/2 that in Salmon River at their confluence. The creek runs in a deeply incised valley, heading east of Susie Mountain, against a stream known to the miners as Kinikunok River (possibly Bales Creek on the U.S.G.S. reconnaissance map).

No prospecting has been done on Medicine Creek, nor on any of the unnamed tributaries on the left limit of Salmon River.

PRODUCTION

	1927	1928	1929	1930	1931 (estimated)	Totals
Clara Creek, ounces		71	224	385	410	1090
Squirrel Creek "		60	141	245	245	691
Platinum Creek "	7½		36	22		65½
Dry Creek "				44	100	144
Fox Creek "	10	13	20	80	25	148
Totals	17½	144	421	776	780	2138½

Average value per yard mined on Clara Creek is 0.082 ounces
Average value per yard mined on Squirrel Creek 0.104 "
" " " " " Platinum Creek 0.032 "
" " " " " Dry " 0.085 "
" " " " " Fox " 0.075 "

FUTURE DEVELOPMENTS

If water could be pumped, either from Salmon River or Kuskokwim Bay, all of the small shallow creeks on the right limit of Salmon River (including McCann Creek) in the platinum bearing area, could be hydraulicked. Salmon River itself might, after careful drilling, be a small dredging proposition. Much prospecting needs to be

done in the area. None of the streams on the left limit of Salmon River have been prospected, so far as could be ascertained. There is no reason why the streams running from Susie Mountain should not be platinum bearing, as that mountain is apparently of the same formation as Red Mountain. If platinum is found in these streams, it would increase the platinum bearing area enormously. Several small gullies run from Red Mountain into Kuskokwim Bay. So far as known, none of these have been prospected. Other basic rock areas northeast of Susie Mountain should be investigated also for platinum minerals. Some of the platinum on Clara and Squirrel Creeks still has ~~the~~ pieces of the matrix in which it originally occurred, clinging to it. This is dunite and peridotite altered to serpentine. If the rocks on Red Mountain have a zonal arrangement, it is possible that some (or one) of these zones may have enough platinum minerals in them to justify lode mining. It is claimed that on the Kinikunok River to the east of the head of Medicine Creek, the rocks are granitic and that prospects of gold have been found on this river. North of Goodnews Bay on Sphinx Creek, two men mined enough gold to support them until their death in about 1925. This creek should be investigated to see if there is not at this place a large body of reconcentrated glacial outwash material suitable for gold dredging.

Irving Reed