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KLONDIKE



**AND
ALL
ABOUT
IT...**



**Alaska and its Hoarded Treasures.
How to Get to Klondike.
Outfit, Clothes, Food, Expenses.
How the Gold Got There.
How to Get the Gold.
Siberian Methods of Mining.
Mining Laws of United States and Canada.
Map of Alaska, Etc., Etc.**

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BY

A Practical Mining Engineer.

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KLONDIKE

AND ALL ABOUT IT.

ALASKA.

ALASKA is a country which embraces a vast territory. The mainland is estimated to contain an area of 580,000 square miles, while the islands of the Alexandrian Archipelago contain 31,200 square miles and the Aleutian Islands 6,400 square miles, a grand total of 617,600 square miles. The mainland has an extent, north and south, of over 1,000 miles, while *Altu*, the last island of the Aleutian group, is 2,000 miles west of *Sitka*. The longitude of *Altu* is as many degrees west of *Seattle* as *Eastport, Me.*, is degrees east. When the

fisherman of Maine is getting up for breakfast the fisherman of Altu is getting ready to go to bed.

A range of high mountains, covered with snow and seamed with glaciers which push their feet into salt water, runs parallel with the coast and divides the country into two unequal parts—the narrow coast strip, with islands and a moist climate, where zero weather is rare, and the vast interior, where the thermometer has a range of 180°.

The coast region is accessible at all seasons by ocean vessels. All the principal settlements are on the coast. During the summer a large number of tourists visit Sitka, Juneau, and the glaciers.

Alaska was purchased from Russia in 1867 at a cost of \$7,200,000—less than two cents an acre. It has already paid for itself by royalties from the Fur Sealing Company, not to speak of the salmon industry, which has yielded more than the purchase price, while the Treadwell Gold

Mill, on Douglas Island, has given to the world in gold more than the original cost of the country.

Juneau is the metropolis of Alaska and the outfitting point for the Yukon region, as it also is for the gold region of the coast. It was founded in 1880, and named in honor of Joseph Juneau, who first found gold on Douglas Island, two miles away, where the famous Treadwell Quartz Mill (the largest in the world) is located. The ore is low grade, averaging about \$3.50 a ton, but it is easily worked, and during 1895 gave a profit to its owners of about \$500,000. Juneau is a progressive city, with fine buildings and stores, substantial wharves, water works, electric lights, banks, hotels, newspapers, schools, and churches. Sitka is the capital.

The great interior of Alaska is accessible less than half of the year, and then with much difficulty and hardship. The mighty basin of the Yukon, which comprises two-thirds of the entire Territory, is one of the

most remarkable regions in the world. Were it not for this great artery—which goes pulsating for over 2,000 miles in the Northwest, bidding defiance, through the influence of the summer sun, to the Frost King who stands on either side with his ice and snow—the world would never know of the wealth of the interior. The Yukon is formed by the junction of the Pelly and Lewis rivers—the former 600 miles long and the latter 360. From Fort Selkirk (at the confluence of the rivers) to the mouth of the Yukon the distance is 2,044 miles, and the way is navigable for flat-bottom steamers of four or five hundred tons.

From Fort Selkirk the Yukon flows 400 miles northwest, touching the Arctic Circle, and then southwest for 1,600 miles to Behring Sea. It is sixty miles wide at its mouth, and so shallow that ocean vessels cannot enter. Along its banks flowers bloom in the summer and birds sing in the trees, but in September the frost comes,

and soon the whole country is covered with snow, the rivers become ice, and the thermometer drops to 60° and 80° below zero. There are a good many Indians living along the river, who subsist on game and fish. Missionaries are at work at several points; at Circle City there are two hundred communicants belonging to one mission. Fossils of the mammoth and other gigantic animals are found along the Yukon. The navigable tributaries of the Yukon are the Lewis, Pelly, Stewart, Tahkenna, Hootahnqua, Porcupine, Tanana, Anvik, White, Birch, Salmon, and others, to the extent of several thousand miles.

NATURE'S HOARDED TREASURES.

*(From the Alaska Mining Record,
January, 1897.)*

The very small portion of Alaska which has thus far been prospected for quartz lies entirely along the southeastern coast and never more than three miles from navi-

gable-tide water. Back of this very narrow strip the vast region is a veritable *terra incognita* so far as its leads, lodes, and ledges are concerned. True, the miner has penetrated the far interior, and auriferous rock has been found there, but it has invariably been passed by as being an impracticable proposition; yet there it lies, awaiting only the process of development to add its golden riches to the treasure of the world, while the prospector, searching only for the nuggets and coarse dust which he may at once carry with him out of the wilderness, has paid no attention to that which may not be readily gathered, or, observing it, has given it no heed in his quest for the immediately profitable placer ground. The utter absence of roads and trails, and the great difficulty to be found building them through the wild mountain fastnesses and dense vegetation of their rugged sides, have confined the operations of the quartz prospector, and hence of his successor, the developing

purchaser, to that very limited strip which lies within easy access to tide-water.

This strip, however, has already entirely fulfilled the most sanguine expectations, has developed fortunes, and yet is scarcely touched. Side by side with developed properties, from which gold is being taken in surprising amounts, lie tracts whereon the foot of the prospector has never trodden; hills and mountains which can but be rich in the precious ores, yet awaiting the patient and intelligent search which has been often richly rewarded, and which shall meet further and greater reward whenever and wherever upon this coast it shall be diligently prosecuted and when development shall expose the hidden riches of this treasure house of Nature. This strip includes also the thousands of islands which line the coast, and upon them are located many of the richest of the developed properties, as well as many of the most promising prospects in Alaska, many of which are being looked

up and bonded by capitalists with a view to investment.

THE YEARLY OUTPUT OF GOLD.

The output of the mines of Alaska is difficult of estimation. The vastness of the mining territory, the extremely migratory characteristic of its population, and the entire absence of reports and statistics from a great part of the smaller camps render it a very difficult matter to arrive at a statement approximating correctness, except by careful study and watchful attention to every detail. The following estimate is the result of just such work, and is believed to be as nearly correct as is possible and still represent fully, yet conservatively, the production of gold in Alaska during 1896:

Total output of quartz mines.....	\$2,355,000
Lituya Bay placer mines.....	15,000
Cook Inlet placer mines.....	175,000
Birch Creek district, Yukon mines.....	1,300,000
Other Yukon districts.....	800,000

From several small creeks in various parts of the Territory, worked by ar- rastres.....	\$25,000
<hr/>	
Total output.....	\$4,670,000

This is an increase over 1895 of \$1,670,000. At the same time the number of new discoveries which promise well has been great. These will be more or less productive during the next year, and a corresponding increase is assured.

The mining population has wonderfully increased during 1896, and the present year opens with promise of unprecedented immigration. Over 11,000 people came to Alaska last year, and of those who took their departure at the approach of winter a great number have expressed their intention to return. These, with the number who will visit Alaska for the first time in the spring, will swell the number to a total far beyond that of any previous season. The great majority will come to seek fortune in the mines, and, if properly

distributed throughout the country, will advance its development greatly. The great area of Alaska will afford profitable fields for an incalculable number, but the danger of overcrowding a particular district should not be underestimated. Last season's rush to the Inlet may be taken as a complete demonstration of this fact. While in Alaska there is ample prospecting ground for thousands more than will ever undertake its occupancy, it cannot be expected all can prosper within the bounds of any district. There is little ground in Southeastern Alaska which will not repay careful prospecting. All the choice spots have by no means been found or located, nor do they lie within the confines of any section, but are liberally scattered throughout the length and breadth of the vast domain of the great Northwest. Here, as throughout the mining regions of the world, careful work reaps the richest reward, and thorough search over a reasonably limited space is worth years of almost

aimless wanderings looking for fortunes in nuggets already panned out and awaiting only the picking up. Mining is a business which can be more advantageously carried on in Alaska than in many more favored places, but it must be prosecuted intelligently or failure is certain. The bitter disappointments of the past should prove a fund of instruction to those who contemplate coming to Alaska; but to the practical and experienced miner or prospector there need come no fear that his coming will be in vain.

THE YUKON ALL-WATER ROUTE.

Various lines of steamers leave Seattle which will take one all the way to the Yukon Gold Fields by water. These steamers leave Seattle, sailing out upon the Pacific Ocean through Dutch Harbor of the Aleutian Islands, into Behring Sea, and thence to St. Michael's, an island in Norton Sound. The distance from Seattle to St. Michael's is 2,850 miles and takes about

fifteen days of steamer travel. Arriving at St. Michael's, one has to change from the seagoing vessel to a flat-bottom steamer to ascend the Yukon to Circle City. St. Michael's to Circle City is 1,500 miles, and one can count on its taking ten days.

The Yukon is navigable only during the summer season. Later than August 15th the chances are against one's being able to ascend it, as, with the cold weather of fall and winter, the snows cease to melt and the water becomes too low for navigation, and still later it becomes blocked with ice. A severe winter and late spring are looked for the coming year, and it is extremely doubtful if the Yukon will be open before June 1st.

It would be folly to attempt to name the steamship lines running from Seattle to St. Michael's, or from St. Michael's to Circle City, as new lines are starting up daily. The new companies that are being incorporated to run steamers and boats of all kinds next spring, assure one that they

need hardly fear that transportation facilities will not be ample, even for the enormous rush of people bound Klondike-ward.

OVERLAND ROUTE.

The first hundred miles over this route is accomplished by steam navigation from Juneau to Dyea ; the next stage is made by canoe and sleigh, or, if preferred, by pack train, twenty-seven miles to Lake Linderman, where boats are built in which the downstream journey is continued to completion.

WHEN TO START.

Parties should start from Juneau between the middle of March and end of April, as they can then do their own transporting on sleighs across the summit and down the lakes to where good timber for boat-building is to be found, and the start down the river made when the ice breaks, which is much earlier than on the lakes, and the mines may be reached a month sooner than if the boats are built on the

lakes and a wait made for the ice to break up there. Four or five men should compose each party, as one tent, stove, set of tools, etc., will suffice for all. One of the party should have a knowledge of boat-building, for it is an absolute necessity that the craft shall be staunch and substantial. The double-ended batteau is the pattern ordinarily preferred, though the plain scow of good depth is more easily built and can be depended upon. No man should attempt the journey alone.

OUTFITS.

Juneau merchants make a specialty of this trade, know exactly what is wanted and how it should be put up. An outfit depends much upon the purse and taste of the purchaser, and will cost from \$50 to \$150. Experience has proved the following to be essentials :

Flour, 50 pounds ; baking powder, 1½ pounds ; dried fruit, 15 pounds ; bacon (side), 20 pounds ; beans, 35 pounds ; su-

gar (loaf), 10 pounds ; coffee, 3 pounds ; tea, 1 pound ; salt, 3 pounds ; pepper, $\frac{1}{2}$ pound ; desiccated onions, 1 pound ; matches, 2 bunches ; butter, milk, rice, corn meal, etc. (optional).

Two pairs of heavy woollen socks, 1 pair Canadian laragans or shoe packs, 1 pair German socks, 2 pairs heaviest woollen blankets, 1 oil blanket or canvas, 1 Mackinaw suit, 2 heavy flannel shirts, 2 pairs heavy overalls, 2 suits heavy woollen underwear, 1 pair gum boots (Golden Seal, crack-proof, preferable), 1 pair snow shoes, 1 pair snow glasses, cap, mittens, mosquito netting, etc.

One 8x10 wall tent (8 ounce duck or heavy drill), 1 small Yukon stove, 3 lengths telescope pipe, 1 large frying pan, 1 baking pan, 1 8-quart granite kettle, 1 6-quart granite kettle, 1 8-quart bread pan, 1 coffee pot, 1 granite plate, 1 granite cup, 1 large mixing spoon, 1 knife, fork, and spoon, 3 $\frac{1}{2}$ -pound axe, nails, hammer, saws,

pitch and oakum for boat-building, and 50 feet $\frac{5}{8}$ -inch rope.

Juneau is reached from Puget Sound ports by four to six steamers each month. The trip usually takes five or six days. Hotel rates at Juneau are from \$1 to \$2 a day. Good restaurants furnish meals at 25 cents and up. During the spring months steamers leave Juneau for Dyea a day or two after the arrival of mail steamers; usual fare, \$10. No actual survey of this route has ever been made, but the following table of distances has been carefully estimated and for all practical purposes will be found correct:

DISTANCES FROM JUNEAU.

	Miles.
To Haines (Chilkat).....	80
“ Head of canoe navigation	106
“ Summit of Chilkoot Pass.....	115
“ Lake Linderman Landing.....	124
“ Head of Lake Bennett.....	129
“ Boundary line bet. B. C. & N. W. T..	139
“ Foot of Lake Bennett	155
“ Foot of Caribou crossing.....	158

	Miles.
To Foot of Takou Lake.	175
“ Takish House.....	179
“ Head of Mud Lake.....	180
“ Foot of Lake Marsh.....	200
“ Head of Cañon	225
“ Head of White Horse Rapids.	228
“ Takheena River.....	240
“ Head of Lake Le Barge.....	256
“ Foot of Lake Le Barge	287
“ Hootalinqua	320
“ Cassiar Bar.	347
“ Little Salmon River.....	390
“ Five Fingers.....	452
“ Pelly River.....	510
“ Stewart River.. ..	630
“ Forty Mile Creek.....	750

OTHER DISTANCES.

To Sitka	160
“ Wrangell	148
“ Seattle.....	899
“ San Francisco	1596

The following information regarding the trip from Juneau to the Yukon is taken from the *Alaska Searchlight*, January, 1895:

The miner of Alaska looks to the Yukon country for a reproduction of the scenes of the Cassiar and Cariboo districts. That along that river and its numerous tributaries there are millions of dollars hidden in the sands or locked within the mountains' rock-bound walls there can be no doubt. For several years the more adventurous of our placer miners have been going to that Mecca of the North—Forty Mile Creek. Many of them have returned, after one or two seasons' sojourn, none the richer, save in experience; others have struck it rich and made for themselves snug little fortunes; and a thousand others are wintering there now, hoping that next summer may bring them that good luck for which they have so long waited.

Day after day, and season after season, the miners toil cheerfully at the bars and old water courses of the creeks and rivers which form part of the Yukon system, and every year sees their numbers in-

creased, and every fall a larger quantity of gold finds its way to the mints, and every spring the Alaskan steamers bring several hundreds to join the fortune-hunters of the interior, Forty Mile being the objective point of all going to the Yukon gold-fields.

Juneau is the outfitting point, the head of regular steamboat navigation during the winter and spring months. Here all persons leave the steamers which have brought them from Sound ports or Victoria. The town is well supplied with hotels and restaurants, where good board can be had for a dollar a day, lodgings extra. Here outfits are purchased for the journey in, and they must be selected and put up with care, for more than seven hundred miles stretch their weary length between Juneau and Forty Mile. The market here offers everything necessary, of good quality and at reasonable prices; the merchants understand the trade and will select and put up an outfit, large or

small; and unless a man knows what he wants, the best thing he can do is to name the price he can afford to pay and leave the selection to the merchant. The cost depends upon the purse of the buyer, and while a few have started in with as small as twenty-five-dollar outfits, a hundred dollars would be a far safer figure, and very many greatly exceed this. Among the principal things is a Yukon sleigh—which is made here from a model which experience has proved to be the best fitted for the work required—axe, saw, and nails for building a boat, warm and serviceable clothing, including gum boots, blankets, and provisions for five months at least.

The valley of the Yukon may be reached from Juneau by four different routes, crossing the coast range of mountains through as many passes—the Dyea or Chilkoot pass, the Chilkat, Moore's or the White pass, and Takou. As the Chilkoot is the only pass used to any extent, it is this route the miner will select. From

Juneau to the summit of the Chilkoot pass is a distance of one hundred and fifteen miles. Small steamers ply irregularly between here and Dyea, the head of navigation, a hundred miles northwest of Juneau. During the early spring these boats usually sail a day or two after the arrival of the mail steamers from the Sound. The trip in good weather is made in twelve hours if there is no towing to be done, and the regular fare is ten dollars, each passenger furnishing his own blankets and provisions. If the party is a large one with considerable baggage, a scow is loaded with the miners' outfits; if the tides are high the boat sometimes goes over the bar at the head of Douglas island, thus saving nearly twenty miles of travel, besides avoiding the rough waters of the Takous. If the tides are not high the scow may be towed over the bar by the little tug *Julia*, and the steamboat will take its course around the lower end of Douglas. In rounding the point of the

island the vessel is often subjected to the fierce winds which sweep down the valley of the Takou River. If there is a strong north or northwest wind, like a demon it comes roaring out from the Takou, lashing the water into foam in its rage, and tossing volumes of spray clear over the top of Grand Island. When the steamer has come around to the head of the island it takes the scow in tow, and in about twenty hours from the time of leaving it enters the mouth of the Dyea River near Chilkoot—the salt-water journey is ended.

Here on a sandspit, about a mile below Healy & Wilson's trading posts, the outfits are taken from the scow and piled up on the beach. Each man must look out for himself now—the guardianship of your baggage by any carrying company is ended. Juneau is nearly a hundred miles behind you. Immediately in the foreground is the ranch and store owned by Healy & Wilson, and beyond in their mantles of snow rise the coast mountains,

cold and severe, striking a feeling of dread into many a heart; and beyond this frozen barrier there stretches away hundreds of miles the vast country of the Yukon, an expanse so wide that it is limited only by the extent of man's endurance. But haste must be made in the sorting of outfits and getting them above tide-water. Most miners camp nearby in the edge of the woods, perhaps taking one or two meals at the trading post, which can be had at the price of fifty cents each; others find both board and lodging there until they are ready to push on.

Now for the first time the miner begins to size up his belongings, and begins to realize that a proper outfit for a trip of this kind is the result of experience; and the longer he has been in this country and the more thoroughly he knows it, just so much more care is used in the selection and packing of his outfit. A careful and thorough examination should be made to see that nothing has been lost or forgot-

ten. There is his Yukon sleigh, without which further progress would be well-nigh impossible—a skeleton affair made from the best hard wood and shod with ground steel runners. It is seven feet three inches long and sixteen inches wide—just the proper width to track behind snowshoes—and its cost from seven to fourteen dollars. Steel is preferable to iron for the shoes, as it slides more easily through the fine, dry snow one finds in the early spring. No outfit is complete without snowshoes, tent, blankets or fur robes, besides tools for boat-building and plenty of provisions; and now an ingenious little sheet-iron stove has come to be almost an indispensable luxury. An ordinary outfit will weigh about four hundred pounds to the man, although some have been taken in which would tip the scales at fifteen hundred weight. Such large outfits are no longer necessary or advisable, as competition between the trading companies at Forty Mile has so

reduced prices that it does not pay to take in more than a generous allowance for the journey, as it is easier to buy the provisions for the season's prospecting there. If anything is lacking it is well to remember that this post is the last store until the Yukon is reached. Unless the weather is stormy, one night is all that is spent in camp here, and in the morning the outfit is moved ahead. Unless it is very small, this must be done in sections, and it is necessary to "double-trip" it, in miner's parlance—that is, make two or more loads of the outfit, moving a part ahead to some point, then unloading it and returning for the rest. On leaving Healy & Wilson's with the last sleigh load, one bids farewell to hotels, restaurants, steamboats, and stores—in fact, to civilization—and is a "free man" to pursue his course how and where he will; beyond all conventionalities of society, and practically beyond all law so far as it is the outgrowth of organized government.

Going up the Dyea River five miles on the ice will bring one to the mouth of the cañon. Here in the woods a comfortable camp can be easily arranged. The tent is pitched on top of the snow, the poles and pins being pushed down into it. While some are busily engaged in building a fire and making a bed, the best cook of the party prepares the supper. If you have no stove a camp fire must be built, either on an exposed point of rock or in a hole dug down in the snow; if you have a stove it can be quickly arranged on a "gridiron" inside the tent, the gridiron consisting of three poles some six or eight feet long, and laid on the snow, on which the stove is placed. The heat from the stove will soon melt a hole underneath, but there will be enough firm snow under the ends of the poles to hold it up. For the bed, hemlock brush is cut and laid on the snow to a depth of a foot or more, and this is covered with a large square of canvas on which the blankets and robes are

put; when finished it forms a natural spring bed, which will offer grateful rest after hauling a sled all day.

Dyea Cañon is about two miles long and perhaps fifty feet wide. A boat cannot go through it, but in the early spring miners go through on the ice, bridging with poles the dangerous places or openings. After the ice breaks up it is necessary to go over the trail on the east side of the cañon. This trail was built by Captain Healy at his own expense, but is little used, as most miners go through the cañon before the ice breaks up. The camping place beyond the cañon is a strip of woods some three miles long, known as Pleasant Camp. Its name is something of a misnomer, for there is not even a log shanty there; some woods to give a kind of shelter, and, as everywhere else along the route, plenty of snow.

From here the ascent is gradual, and the next and last camp in timber before crossing the summit is known as Sheep Camp.

This is at the edge of timber, and no wood for a fire can be gotten any higher up. This camp is not usually broken until all of the outfit has been placed on the summit. When the weather is favorable, everything except what is necessary for camp is pushed a mile and a half to Stone House, a clump of big rocks, and then to what is called the second bench. Care must be exercised in case of soft weather, or everything is liable to be swept from the bench by a snow-slide or avalanche, and should this happen the Indians will prove of great assistance in recovering part of the things. With long, slender rods tipped with steel they feel down in the snow and locate most of the larger packages, which, without them and their feel rods, one would never find. At Sheep Camp the summit towers above you about thirty-five hundred feet, but the pass is some five hundred feet lower. No further progress can be made until a clear day, and sometimes the weather continues bad

for two or three weeks, the mountain top hidden in thick clouds, and icy wind hurling the new-fallen snow in every direction, or driving the sleet in the face of any one bold enough to stir out of camp and peep up at that almost precipitous wall of snow and ice. But sunshine comes at last and the winds grow still. Now comes the tug of war—to get the outfit to the summit. For six hundred feet every step must be cut in the ice, and so steep is it that a person with a pack on his back must constantly bend forward to maintain his equilibrium. The first load landed on the summit of the pass, a shovel is stuck in the snow to mark the spot, then back for another pack, and fortunate is he who gets his whole outfit up in a single day. Indians may be hired to do the packing, and their rates vary slightly, but the regular price has been five dollars a hundred weight from the second bench to the summit, or fifteen cents a pound from Healy & Wilson's to the lakes. These prices

have been shaded a little the past season, and some outfits were packed over to the lakes at thirteen cents a pound. The reasons for this cut in prices are that many miners insist on doing their own packing, and that their work has been seriously affected by a tramway device which was operated last season with more or less success by one Peterson, whose inventive genius led him to believe that a simple arrangement of ropes and pulleys would greatly help in getting outfits up the steeper places. A small log is buried in the snow, and to this "dead man" a pulley is attached through which a long rope is passed, to the lower end of which a loaded Yukon sleigh is attached, and the empty box on the sled, fastened to the upper end of the rope, is then filled with snow until its weight becomes sufficient to take it down the incline, thus dragging the other one up. The snow was found too light, but with three or four men as ballast in place of snow it worked well and saved

a good deal of hard packing. When the last load has reached the summit and the miner stands beside his outfit, looking down toward the ocean only twenty miles away, he can feel that his journey has fairly begun, and as he turns he sees the descending slope melting away into the great valley of the Yukon.

The descent for the first half-mile is steep, then a gradual slope to Lake Linderman some ten miles away. But there is but little time for resting and none for dreaming. as the edge of the timber, where the camp must be made, is seven miles from the summit. Taking the camping outfit and sufficient provisions for four or five days, the sleigh is loaded, the rest of the outfit is packed up or buried in the snow, shovels being stuck up to mark the spot. This precaution is necessary, for storms come suddenly and rage with fury along these mountain crests. The first half-mile or more is made in quick time, then over six or seven feet of snow the

prospector drags his sleigh to where there is wood for his camp-fire. At times this is no easy task, especially if the weather be stormy, for the winds blow the new-fallen snow about so as to completely cover the track made by the man but little ahead; at other times, during fine weather and with a hard crust on the snow, it is only a pleasant run from the Pass down to the first camp in the Yukon basin. In all except the most sheltered situations the tent is necessary for comfort, and the stove gives better satisfaction than the camp-fire, as it burns but little wood, is easier to cook over, and does not poison the eyes with smoke. It is a noticeable fact that there are fewer cases of snow blindness among those who use stoves than among those who crowd around a smoking camp-fire for cooking or for warmth. Comfort in making a trip of this kind will depend, in a great measure, upon the conveniences of camping, suitable clothing, and light, warm bedding—yes, upon provisions,

too, though oftentimes more depends upon the cook than what is in the larder. The necessary articles of food are flour, bacon, beans, sugar and tea; ham, canned meats, rice, milk, butter, dried fruits and coffee are usually taken also, although some old-timers look upon them as luxuries only.

After the rest of the outfit has been brought from the summit, the next move is to Lake Linderman, about three miles distant. The route now lies seven miles across the lake to its outlet; down the outlet three or four miles, in a northeasterly direction, to Lake Bennett; down to the foot of this lake, twenty-five miles; then down the river four or five miles, and Takou Lake is reached. This lake is some twenty miles long and empties into Mud Lake through an outlet three miles long. Mud Lake is about ten miles in length, and at the foot of it open water is usually found in April. Open water will probably be passed before reaching this point in the rivers connecting the lakes, but

firm ice at the sides affords good sledding; but at the foot of Mud Lake a raft or boat must be built. Dry timber can be found along the shores with which to build a raft which will take everything to the Lewis River Cañon, about forty miles to the northwest. The course down the lakes has been much in the form of a horseshoe, and now bears to the west instead of the east.

Before reaching the cañon a high-cut bank of sand on the right-hand side will give warning that it is close at hand. Good river men have run the cañon safely even with loaded rafts, but it is much surer to make a landing on the right side and portage the outfit around the cañon, three-quarters of a mile, and run the raft through empty. The sameness of the scenery on approaching the cañon is so marked that many parties have gotten into the cañon before they were aware of it. Below the cañon are the White Horse Rapids, a bad piece of

water. But the raft can be lined down the right-hand side until near the White Horse, three miles below. This is a box cañon about a hundred yards long and fifty in width—a chute through which the water of the river, which is nearly six hundred feet just above, rushes with maddening force. But few have ever attempted to run it, and four of them have been drowned. Of two men who made the attempt in May, 1888, nothing was found save a bundle of blankets. Below the White Horse another raft is built, and the journey continued seventy-five miles to Lake Le Barge. This usually requires three days. After entering the lake solid ice is found perhaps a mile from the inlet. Camp is made on the shore, and, as the ice gets soft, most of the sledding is done in the early morning, it being sufficiently light in May to start soon after midnight. This lake is about forty-five miles long, and there is an island about midway. Little snow will be found here late in

April, but it will be all glare ice. After camping on the island a day's journey will make the foot of the lake, and the sledding is completed. If one expects to stay in the country the sled should not be thrown away, however, as it will prove useful later on. A comfortable camp should be made here and the building of a boat commenced. This will require from seven to ten days, and the method of preparing lumber is novel to all who are unused to frontier life. The trees selected should be sound and straight, and twelve inches through at the butt. A saw-pit about six feet high is built near the tree, and the tree felled and cut into logs about twenty-five feet long. When all is ready neighbors are invited to the rolling-bee to help in placing the logs on the pit. To make good lumber requires a sharp saw and experience, besides hard work. To avoid trouble at this time the man in the pit should keep his mouth closed. After the pit is levelled and the log peeled, a

square is made on the smaller end and an exact counterpart on the other. The log is then lined both above and below and squared or slabbed. Then it is lined for the boards, an eighth of an inch always being allowed for the saw-cut. After the boards are sawed the boat is built, calked and pitched, oars and poles made, and the journey resumed. Going down the Lewis River, the Hootalinqua, Big Salmon, and Little Salmon rivers are passed on the right before reaching the Five Fingers. Here four large buttes stand like giant sentinels of stone to dispute your further ingress into the country. The water, in five passages, runs swiftly between. The right-hand passage is the only one which is practicable, and, though the water is swift, it is safe if the boat be kept in the centre.

A few moments of strong pulling and careful management and the boat is rapidly approaching Reef Rapids, three miles below. Here again the right-hand side

insures safety, and, having gone through them, the last dangerous water is passed. Next comes the Pelly River, and the junction of the Pelly and Lewis forms the Yukon proper. At this point the first trading post is reached. This is known as Harper's and is five hundred and ten miles distant from Juneau.

Continuing the journey, Stewart River is passed on the right. Then White River on the left, so named on account of its milky-looking water. The next tributary on the same side is Sixty Mile Creek, so called on account of its being sixty miles above Fort Reliance. A hundred miles below, on the left side, is Forty Mile Creek, forty miles below Fort Reliance. Here the Yukon is over two miles in width, and on the upper bank of Forty Mile Creek is the principal trading post of the interior. This is the starting point for all the mines and is seven hundred and fifty miles from Juneau.

This journey is made in early spring by

most miners, in order to save expenses of packing, and requires then from six to eight weeks, although it can be made in summer from the lakes in eight or ten days. Plenty of provisions should be taken, as little if any game is seen, unless one goes back into the hills for it. Fish are plentiful, and a gill net should form a part of every outfit. The whitefish taken from the ice-cold waters of the lakes are the finest in the world. In the spring gull eggs are abundant on the small islands at the foot of Lake Le Barge.

ANOTHER ROUTE.

The best trail from the coast to the Yukon region is said to be by the Lake Teslin trail. It starts at Fort Wrangell and presents few difficulties. This route leads up Telegraph Creek from Fort Wrangell, and is clear-water travel for about one hundred miles up the creek. The creek is abandoned there, and the traveller strikes straight across the smooth table land for about

one hundred and seventy-five miles. Then Teslin Lake is reached, and it is plain sailing down the Hootalinqua River, a tributary of the Lewis River, and down the Lewis it is clear going to Dawson City.

The only dangerous part of this route is the Five Fingers Rapids, and these are not bad if one has a guide. John C. Calbreath, for many years a resident on Telegraph Creek, has been directed by the British Columbia government to open this new route, and two thousand dollars will be expended upon it immediately. Steamboats can operate up Telegraph Creek. Even now, it is said, the trip to the gold fields can be made with less danger and more quickly by this route than by any other. It is open usually until the middle of October, and sometimes as late as November.

WHAT SUPPLIES TO BUY.

Thomas Cook, who has been a miner

for nineteen years and is among those who came down on the *Excelsior* after making a lucky strike on the Klondike, prepared, at the request of the *Examiner*, the following approximate estimate of the actual requirements of a Yukon miner. These figures are on the side of conservatism, as they are based on his own experience, and he admits that he is rather below than above the average as miners go in the matter of food consumption. The prices quoted, except in the case of such articles of outfit as moccasins, suits, and the "parkie," which are obtainable in Alaska or the Yukon country of the Northwest, are about current rates in San Francisco. If these supplies were purchased at Dawson City the prices would be from three to four times as much, and Mr. Cook says he does not pretend to say what they will cost next winter. He warns any man against the folly of going without at least as good a stock as he has enumerated here. His

advice is, "Get plenty of staples, and get the best clothes obtainable of the kind named."

COST OF THE OUTFIT.

500 pounds flour.....	\$12 50
100 pounds oatmeal.....	6 00
100 pounds beans.....	2 35
24 pounds coffee, at 30 cents.....	7 20
24 pounds tea, at 50 cents	12 00
100 pounds bacon, at 14 cents.. ..	14 00
100 pounds dried potatoes, at 5 cents	5 00
50 pounds dried vegetables, at 5 cents ...	2 50
100 pounds dried fruits, at 6 cents.	6 00
25 pounds (2 cases) condensed milk.....	2 50
5 pounds baking powder.. ..	2 50
5 pounds salt and pepper	1 00
50 pounds canned butter, at 25 cents.....	12 50
30 pounds lard, at 10 cents. . .	3 00
25 pounds rice, at 5 cents.....	1 25
20 pounds tools	15 00
50 pounds stove and cooking utensils.....	100 00
2 pounds matches, etc	1 50
<hr/>	
1,310 pounds supplies	\$206 80
Three suits of underclothes of good wool..	12 00
Three overshirts of wool	6 00
Two pairs overalls.....	2 00

Six pairs woollen stockings.....	\$6 00
Two pairs blankets... ..	16 00
One fox-skin robe	50 00
One reindeer "parkie," covering head and reaching to the knees	12 00
Three pairs caribou mittens	6 00
Two fur caps	8 00
Two pairs rubber boots	7 00
Three pairs moccasins	9 00
One pair "muckluks".... ..	5 00
One woollen "mackinaw"—a sort of wool- len sweater	10 00
Two sweaters (extra thick)	8 00
	<hr/>
Total outfit, 120 pounds	\$157 00
Total supplies, 1,310 pounds	206 80
	<hr/>
Grand total, 1,430 pounds	\$363 80

Miners who remain over winter adopt the dress of the natives. Water boots are made of seal or walrus skins; dry weather or winter boots, from various skins, fur trimmed. Trousers are made of fawn and marmot skins, while the upper garment, combined with a hood, called tarka, is made of marmot and trimmed

with long fur, which helps to protect the face of the person wearing it. Flannels can be worn under these, and not be any heavier than clothing worn in a country with zero weather.—*San Francisco Examiner*.

WHEN WOMEN GO.

An interesting phase of the Klondike craze is the frantic determination of many young women to go. All the expeditions are besieged by women applicants. Here is what a woman who has roughed it on the Klondike says :

“A woman actually needs little in the way of an outfit, presupposing, of course, that she goes with a man who takes the necessary camping outfit and food along. This is what she requires for her personal comfort :

“One medicine case, filled on the advice of a good physician; 2 pairs of extra-heavy all-wool blankets, 1 small pillow, 1 fur robe, 1 warm shawl, 1 fur coat, easy-fitting; 3 warm woollen dresses, with com-

fortable bodices and skirts knee-length (flannel-lined preferable); 3 pairs of knickers (or bloomers) to match the dresses, 3 suits of heavy all-wool underwear, 3 warm flannel night-dresses, 4 pairs of knitted woollen stockings, 1 pair of rubber boots, 3 gingham aprons that reach from neck to knees; small roll of flannel, for insoles, wrapping the feet, and bandages; a sewing kit; such toilet articles as are absolutely necessary, including some skin unguent to protect the face from the icy cold; 2 light blouses, or shirt waists, for summer wear; 1 oilskin blanket to wrap her effects in (to be secured at Juneau or St. Michael's); 1 fur cape, 2 pairs of fur gloves, 2 pairs of surseal moccasins, 2 pairs of muckluks (wet-weather moccasins)."

HOW THE GOLD GOT THERE.

Any one, even with the smallest amount of curiosity, will be asking himself this question. Geologists, scientists, and mining engineers have explanations legion.

Hypothesis and theories, of many differences, all have their supporters. A much-accepted and easily understood theory is the following :

Starting with the fact that all gold existed at one time in quartz ledges, or veins, we can readily follow the different steps. Earthquakes, glacial wear, and volcanic disturbances have gradually levelled off some thousands of feet from the mountains in which these gold-bearing quartz veins existed. Immense ledges of quartz were thus broken up into boulders. Then, again, pretty much everywhere in mining regions was at some time or other the bed of a river. The gold-bearing quartz boulders, falling into the rushing waters of some mighty river, have been ground and worn smooth, or else broken into smaller boulders.

Gold, as is well known, is our most malleable metal, whereas quartz is very fragile. What is more natural, then, than that these boulders of quartz, sub-

jected to the intense bounding and blows as they are rolled along in a rushing torrent of water, should be disintegrated? The quartz constantly breaking away, the gold, being more ductile, clings together, and finally the quartz is entirely broken away and we have left a little well-rounded nugget of gold. It may be no larger than a pea, and still when it left its mother ledge it may have represented the entire gold in a mass of rock weighing several tons. Thus we have our nugget formed. By reason of its great weight it seeks its lowest level, working its way down through the lighter rocks until it settles on bed rock—the bottom of the river bed. Thus will the gravel near bed rock almost invariably be found to contain the most gold.

HOW TO GET THE GOLD.

Our fortune seeker, arrived on the grounds at Circle City or Klondike, or any of the various mining camps, had

much better, if he is a "tenderfoot" and a greenhorn at mining, put in a few days in learning a little about mining and some of the little kinks peculiar to the mining in this region. Prospectors' books and the like are well enough in their way, but an application of these teachings under the direction of an experienced miner may save many thousands of dollars and many days of hardship.

If an experienced prospector is one of your party, after getting the lay of the country you can then decide whether you are going to try your luck in the less known country or stay in the established diggings and stake off your claim in the remaining open ground.

Locate over river gravel, and remember the short side of the bends of a river has generally proved richest. That is all the advice that can be given as to where to locate your claim. Read carefully the laws of both the United States and Canada appended to this volume. They define

what you can lay claim to. Follow the laws to the letter. Be careful about your notices, corner stakes, and the recording of your location notice. Comply with the laws to the letter ; there are lots of sharps that are willing and anxious to jump your claim if there is a flaw in your title to possession and it proves rich digging.

Having secured a claim and established your camp, the next thing is to start sinking to get down to bed rock to determine how rich your gravel is to be. In this cold region, with a temperature down around 60° and 70° below zero in winter, water, of course, there is none, except that which is obtained by melting snow or ice. So the practice is to mine and store the gravel through the winter and wash it during the summer.

In all diggings so far the gravel has been found frozen right down to bed rock, which allows miners to work during winter under the river's bed. Picks and other usual implements of excavating are use-

less in this frozen ground. The only successful method of sinking as yet discovered is an alternate thawing of the ground by fires and then excavating the thawed-out gravel; then firing again, and so on. Each firing will enable one to make on an average a foot of headway. Siberian practices, as set forth in the following chapter, are adapted to the conditions as encountered at Klondike. The various steps of sinking and drifting by thawing are fully described under the head of "Siberian Practices."

Having obtained his dump of gravel, the richest jealously guarded in sacks, the miner impatiently awaits the spring with its warm sun to melt the snows and furnish him with water with which he can pan his dirt. A miner's pan is of sheet iron, like a large round cake pan, some twelve inches in diameter, the sides about two inches high and sloping off at a considerable angle.

In the pan he puts his thawed gravel,

and then, sinking it just over its rims in water, he gives it a rotary motion that loosens the dirt from the pebbles. The pebbles, when free from clinging dirt, he picks out by hand, being careful, you may imagine, not to toss away nuggets. The gold settles to the bottom around the rim, the dirt and sand being, by the rotary, rocking motion, sloped off and away over the sides. Finally only the gold is left in the pan, and either this is scraped off into some receptacle, or else a little quicksilver is poured into the pan, which unites with the gold, and every particle can thus be saved. This gold and quicksilver is called amalgam, the gold afterward being obtained pure by heating the amalgam, which drives off the quicksilver, leaving the gold a united mass.

A good man can thus pan a ton of gravel a day. It is hard, back-breaking work, but the fascination of ever watching for the yellow color as the dirt washes away will keep a man at work till he finds him-

self exhausted. There is a great knack in panning, as out of the same gravel an experienced man can get a dollar where a greenhorn may get only fifty cents or even less.

To handle greater quantities of gravel, devices known as rockers, cradles, long tons, and sluice boxes have been devised.

WORKING FROZEN ALLUVIAL DEPOSITS IN SIBERIA.

In his report on the gold placers of Eastern Siberia M. Levat says that in the Trans-Baikal the ground below a certain depth is always frozen, and where the gold-bearing deposits extend below that depth it is necessary to adopt special methods of working. Various explanations of this condition of the ground have been offered; the simplest and most natural is found in the intense cold of the climate, the nature of the soil, and the short summers, which allow the ground to thaw for only a few feet before the

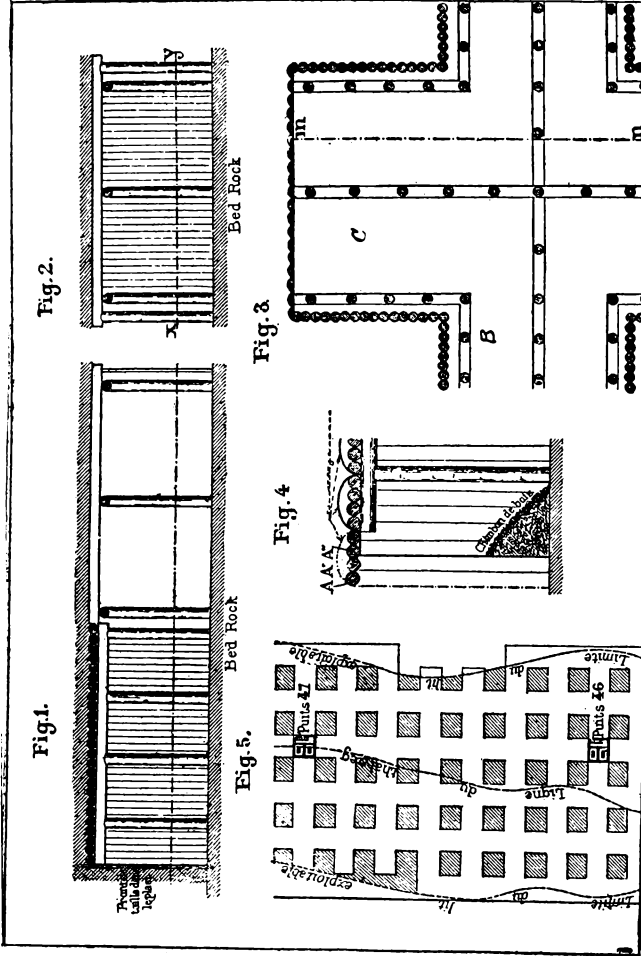
winter returns. In a large part of the region the surface of the earth is very lightly covered with vegetation, and the snowfall in the Trans-Baikal is also light. It is noticeable that in marshy places, where there is a thick covering of grass or herbage, this deep frost is much less apparent than elsewhere.

As the working of frozen ground from the surface is often very difficult, it is usually opened by shafts and galleries, as in ordinary deep mining. The methods adopted in Siberia at different points are nearly similar. Workings of this kind are limited by the fact that only rich deposits will bear the expense involved.

An instance of such workings is found in the Malamaski placers, where the lower part of the ground is exploited by means of shafts, of which there are at present five. The gold-bearing deposit in these placers varies in tenor from 1.4 g. to 6.5 g. per ton; its thickness is from six to eleven feet, and the depth is about one hundred

feet from the surface. The subterranean works were begun, but not very effectually carried out, by the Schouvaloff Company, which preceded the Malamaski Company at these placers.

The method of working is shown in the accompanying engravings, which show in Figs. 1 and 2 sections of the galleries; in Fig. 3 a plan of a part of the gallery; in Fig. 5 a general plan of the works; and in Fig. 4 a section at the breast of a crosscut. The shafts are sunk about fifty metres apart and are joined by a gallery or crosscut, from which chambers are worked at regular intervals, running to the clearly defined borders of the deposit. Pillars are left 4.3 metres square, the intervals between them being 4.3 metres. This arrangement is shown in Fig. 5. The disadvantage is that fully one-fourth of the gold-bearing ore is left in these pillars. They can, however, be taken out when the mine is abandoned, in which



WORKING FROZEN ALUVIUM AT THE MALAMASKI PLACERS, SIBERIA.

case the mine is left to cave in by the weight of the surface soil.

All the workings are very carefully timbered. The walls in most cases are of jointed (tongued and grooved) planks, and the posts used have a minimum diameter of 15 centimetres (6 inches) at the small end. In the crosscuts and chambers separate timbers support the roof, as shown in Figs. 1, 2, 3, and 4. This quantity of timber is made necessary by the weight to be sustained from the time the opening is begun until the work is finally left to cave. This lasts usually about three years. The cost of the timbering is the great objection to this method of working.

In working, the usual method is to pile up wood at the face of the chamber; then fire it and cover the burning mass with charcoal, the object being to concentrate the fire as much as possible below, the heat having a tendency to rise. As may be supposed, the firing brings up the tem-

perature of the mine; when work is going on at several faces the air is frequently so hot that the miners work entirely without clothes, though the temperature of the air outside is 30° or 35° C., equivalent to 22° to 30° below zero in the Fahrenheit scale. When the fire is burned out the face is found to be soft and easily brought down with the pick. The miners then place a new section of timbering, as shown at *A*, *A'*, *A''*, Fig. 4, and the operation is repeated.

In placing the timbers it often happens that gaps are left above them in the alluvium, and, aided by the heat of the mine, there sometimes follow slips which will break the strongest timbers. It seems impossible to prevent these, and they are much feared by the miners. In placing the new timbers of the roof, as at *A*, *A'*, *A''*, in Fig. 4, they are given a slight inclination upward, which tends to hold them firmly against the old timbering. In underground mining this answers very

well, because there is a counter-pressure from the opposite direction. In starting a tunnel into a hillside, however, it is dangerous, as the weight of the superincumbent earth, having nothing to resist it, has a tendency to throw down, or fold up as it were, the whole line of timbering. Such an accident happened at the Iossifoff placer, on the right bank of the Ildikan River.

The usual rule is that each foot in thickness of wood applied to the frozen alluvium will thaw out an equal thickness of gravel. The action, however, will not exceed 35 centimetres (14 inches) as a maximum. The method is not an ideal one, but the circumstances are difficult. The frozen soil cannot be worked with the pick, as it does not break, but simply mats together under a blow. For the same reason powder and dynamite have little effect; moreover the drilling of the alluvium through which quartz boulders are scattered is a slow and costly work.

The action of the fire seems to be the only method applicable under the existing conditions.

This underground work is carried on only in the winter when outside work is impossible. In the winter of 1894-95, at the Malamaski placer, in $6\frac{1}{2}$ months' working, the total number of working days, or men, was 13,770, and of horses 5,276. There were used 2,345 cords of wood and 1,011 cubic metres of charcoal for heating. For lighting there were used 180 kilogrammes of oil and 120 kilogrammes candles. The result was 4,035 metric tons of gravel taken out and washed, from which there were obtained 65.64 kilogrammes gold, or about \$43,600; which seems hardly a paying yield, even at Siberian wages. The average of numerous assays showed that about 80 per cent of the assay value was obtained.—*From the Engineering and Mining Journal.*

MINING LAWS, CANADA AND THE
UNITED STATES.

Canadian Laws.

In case a person thinks of going into the Yukon fields to prospect for gold, so long as he locates a claim in Canadian territory he must be guided by the mining laws of that country. He must therefore bear in mind and obey these regulations, which are the principal features of the statute provided for giving placer miners and their locations of property.

“Bar diggings shall mean any part of a river over which the water extends when the water is in its flooded state and which is not covered at low water. Mines on benches shall be known as bench diggings, and shall, for the purpose of defining the size of such claims, be excepted from dry diggings. Dry diggings shall mean any mine over which a river never extends.

“Miner shall mean a male or female over the age of eighteen, but not under

that age. Claim shall mean the personal right of property in a placer mine or diggings during the time for which the grant of such mine or diggings is made.

“Legal post shall mean a stake standing not less than four feet above the ground and squared on four sides for at least one foot from the top. Close season shall mean the period of year during which placer mining is generally suspended—the period to be fixed by the gold commissioner in whose district the claim is situated.

“Locality shall mean the territory along a river tributary of the Yukon and its affluents. Mineral shall include all minerals whatsoever other than coal.”

1. Bar diggings—a strip of land one hundred feet wide at high-water mark and thence extending along the river to its lowest water level.

2. The sides of a claim for bar diggings shall be two parallel lines run as nearly as

possible at right angles to the stream, and shall be marked by four legal posts, one at each end of the claim at or about high-water mark; also, one at each end of the claim at or about the edge of the water. One of the posts shall be legibly marked with the name of the miner and the date upon which the claim is staked.

3. Dry diggings shall be one hundred feet square, and shall have placed at each of the four corners a legal post, upon one of which shall be legibly marked the name of the miner and the date upon which the claim was staked.

4. Creek and river claims shall be five hundred feet long, measured in the direction of the mineral course of the stream, and shall extend in width from base to base of the hill or bench on each side, but when the hills or benches are less than one hundred feet apart the claim may be one hundred feet in depth. The sides of a claim shall be two parallel lines run as nearly as possible at right angles to the

stream. The sides shall be marked with legal posts at or about the edge of the water and at the rear boundary of the claim. One of the legal posts at the stream shall be legibly marked with the name of the miner and the date upon which the claim was staked.

5. Bench claims shall be one hundred feet square.

6. In defining the size of claims they shall be measured horizontally, irrespective of inequalities on the surface of the ground.

7. If any person or persons shall discover a new mine, and such discovery shall be established to the satisfaction of the gold commissioner, a claim for the bar diggings, seven hundred and fifty feet in length, may be granted. A new stratum of auriferous earth or gravel situated in a locality where the claims are abandoned shall for this purpose be deemed a new mine, although the same locality shall

have previously been worked at a different level.

8. The form of application for a grant for placer mining and the grant of the same shall be according to those made, provided, or supplied by the gold commissioner.

9. A claim shall be recorded with the gold commissioner in whose district it is situated within three days after the location thereof, if it is located within ten miles of the commissioner's office. One day extra shall be allowed for making such record for every additional ten miles and fraction thereof.

10. In event of the absence of the gold commissioner from his office for entry, a claim may be granted by any person whom he may appoint to perform his duties in his absence.

11. Entry shall not be granted for a claim which has not been staked by the applicant in person in the manner specified in these resolutions. An affidavit that the

claim was staked out by the applicant shall be embodied in the application.

12. An entry fee of \$15 shall be charged the first year and an annual fee of \$100 for each of the following years.

13. After ending a claim the removal of any post by the holder thereof or any person acting in his behalf for the purpose of changing the boundaries of his claim shall act as a forfeiture of the claim.

14. The entry of every holder for a grant for placer mining must be renewed and his receipt relinquished and replaced every year, the entry fee being paid each year.

15. No miner shall receive a grant for more than one mining claim in the same locality, but the same miner may hold any number of claims by purchase, and any number of miners may unite to work their claims in common on such terms as they may arrange, provided such agreement be registered with the gold commissioner and a fee of \$5 paid for each registration.

16. Any miner or miners may sell, mortgage, or dispose of his or their claims, provided such disposal be registered with, and a fee of \$5 paid to, the gold commissioner, who shall thereupon give the assignee a certificate of his title.

17. Every miner shall, during the continuance of his grant, have the exclusive right to enter upon his own claim for the miner-like working thereof and the construction of a residence thereon, and shall be entitled exclusively to all the proceeds realized therefrom; but he shall have no surface rights therein, and the gold commissioner may grant to the holder of adjacent claims such rights of entry thereon as may be absolutely necessary for the working of their claims, upon such terms as may to him seem reasonable. He may also grant permission to miners to cut timber thereon for their own use upon payment of the dues prescribed by the regulations in that behalf.

18. Every miner shall be entitled to the

use of so much of the water naturally flowing through or past his claim, and not already lawfully appropriated, as shall, in the opinion of the gold commissioner, be necessary for the working thereof, and shall be entitled to drain his own claim free of charge.

19. A claim shall be deemed to be abandoned and open to occupation and entry by any person when the same shall have remained unworked on working days by the grantee thereof, or by some person in his behalf, for the space of seventy-two hours, unless sickness or other reasonable cause may be shown to the satisfaction of the gold commissioner, or unless the grantee is absent on leave given by the commissioner, and the gold commissioner, upon obtaining evidence satisfactory to himself that this provision is not being complied with, may cancel the entry given for a claim.

20. If the land upon which a claim has been located is not the property of the

crown, it will be necessary for the person who applies for entry to furnish proof that he has acquired from the owner of the land the surface right before entry can be granted.

21. If the occupier of the lands has not received a patent thereto, the purchase money of the surface rights must be paid to the crown, and a patent of the surface rights will issue to the party who acquired the mining rights. The money so collected will either be refunded to the occupier of the land when he is entitled to a patent thereto, or will be credited to him on account of payment of land.

22. When the party obtaining the mining rights cannot make an arrangement with the owner thereof for the acquisition of the surface rights, it shall be lawful for him to give notice to the owner or his agent, or the occupier, to appoint an arbitrator to act with another arbitrator named by him, in order to award the

amount of compensation to which the owner or occupier shall be entitled.

United States.

Citizens of the United States, or persons declaring their intention to become such, can explore, locate, and purchase mineral lands by complying with Federal and State laws. Prospectors are not required to take out a license or certificate.

Quartz Land.—Mining claims upon ledges or lodes of precious metals can be taken up along the vein to the length of one thousand five hundred feet, and three hundred feet each side of the middle of the vein. To secure patent, five hundred dollars' worth of work must be performed and five dollars an acre paid for the land—twenty acres. Six months' failure to do work forfeits the claim.

Placer Land.—Claims usually called "placers," including all forms of deposit, excepting veins of quartz or other rock in place, are subject to entry and patent.

No single individual can locate more than twenty acres of placer land, and no location can be made by any company, composed of no less than eight bona fide locators, exceeding one hundred and sixty acres. The price per acre of placer claims is two dollars and a half. Where placers contain veins or lodes the cost per acre is five dollars.

Description.—It is important that locators accurately mark and describe their claims. In marking, the locator may do so in any direction that will not interfere with the rights or claims existing prior to his discovery. Litigation, expense, and delay may be avoided by being particular in the matter of boundaries. The essentials are:

First—That the corners should be marked on the ground by stakes in mounds of earth or rock, or by marked trees or other natural objects. Second—The notice of location should describe these corners, so that they can be identi-

fied on the ground by the description, and, in addition, the direction and distance of one of the corners from a government corner or well-known object, such as a junction of roads, trails or ravines, a bridge, building of any kind, or natural feature, as rock, etc.

Mill Site.—Five acres of non-mineral land may be taken up for such use, and application for lode patent may include mill site, distinctly specifying same; or patent for mill site alone may be applied for by person not owning mine in connection therewith. Price, five dollars per acre.

Right of Way.—Owners or locators of mining claims may acquire a right of way for ingress or egress, when necessary to properly work their claim or claims, over and across the lands or mining claims of others.

Eminent Domain.—This right may be exercised to condemn, for public use, canals, etc., supplying mines with water;

also roads, tunnels, ditches, flumes, pipes, and dumping places for working mines; also outlets for refuse matter and tailings from mines.

Taxes.—Improvements on land, the fee of which is in the State or in the United States, are subject to local taxation. Mining ground, quarries, etc., of private ownership, and the improvements thereon, shall be assessed at the price the same would sell at a fair voluntary sale for each.

Miner's Lien.—All persons doing work upon or furnishing materials for mines or mining claims have a lien upon the same for the work done or material furnished.

Exemptions.—The different States make liberal exemptions, which include dwelling of miner, tools, horses or mules, feed, etc.

Crimes.—Perjury is punished in the United States courts by a fine not to exceed two thousand dollars and imprisonment at hard labor not to exceed five

years, and in addition persons rendered incapable of giving testimony in any court. It is a felony to sell a salted mine; to fraudulently change samples or assays with intent to defraud; to make or give false assay or sample with intent to defraud; to rob vein, sluice box, quartz mill, etc., or trespassing upon mining claim with intent to commit a felony.

It is a misdemeanor to deface, tear down, or destroy a post, monument, boundary mark, or location notice, or without authority to take water from any ditch, pipe, reservoir, etc., or to unlawfully interfere with the same.

Coal Land.—Title to one hundred and sixty acres of coal land can be had by paying twenty dollars per acre if within fifteen miles of a railway, or ten dollars per acre if beyond that limit. An association or company of persons can secure same terms for three hundred and twenty acres or less, and in certain cases six hundred and forty acres.

Stone Land.—Title to one hundred and sixty acres of land containing granite, sandstone, etc., can be had at a cost of two dollars and a half an acre.

WEIGHT AND VALUE OF GOLD.

Gold and silver are bought and sold by troy weight: 24 grains 1 pennyweight, 20 pennyweights 1 ounce, 12 ounces 1 pound. The price established by the United States Mint officials for pure gold is \$20.67 per ounce. On this basis gold of various grades of fineness has value by the ounce as follows:

Gold	1,000 fine	is worth	\$20.67
Gold	900 fine	is worth	18.60
Gold	800 fine	is worth	16.53
Gold	700 fine	is worth	14.47
Gold	600 fine	is worth	12.40
Gold	500 fine	is worth	10.33
Gold	400 fine	is worth	8.26
Gold	300 fine	is worth	6.20
Gold	200 fine	is worth	4.13
Gold	100 fine	is worth	2.06

All natural gold—that is, gold extracted

from rocks or washed from the beds of streams—contains more or less silver, platinum, copper, or other forms of alloy. For this reason miners are often disappointed when they sell, as they imagine all gold to be pure.

UNCLE SAM'S WEALTH.

The area of the United States is 3,025,600 square miles; with Alaska it is 3,602,990 square miles, equal to the area of all Europe, with Italy and Turkey excepted. Texas, its largest State, is 212 times the size of Rhode Island. Texas might invite every man, woman, and child now living in the world to settle within its territory, offering each individual a plot of ground $49\frac{1}{2} \times 100$ feet. The State would not be really crowded, for each individual would have four times the space taken by each person in New York City. England, Ireland, Scotland, Wales, Italy, and Portugal could be transplanted to Texas, and there would still be room for a good-sized

promenade where curious Americans could walk while studying this bit of Europe. Three of the cattle ranches of Texas cover as much territory as the Sandwich Islands, which we were to annex four years ago.

The wealthiest nation of the world is the United States. The census of 1890 shows the true valuation, or fair selling price, of the real and personal property of the country to be \$65,037,091,197. It is an increase of over 49 per cent on the valuation of the previous decade, and is about six times the value of the money of the entire world. The mind cannot grasp the meaning of such figures without graphic illustration. This amount in gold dollars would load 123,570 carts, each carrying a ton. If 2,000 gold dollars were piled one on the other they would form a stack three feet high. Make similar piles close together till a wall of gold one mile long and worth \$230,400,000 is formed, increase this wall to $28\frac{1}{4}$ miles, and the

amount would represent our national wealth. Placed side by side, the coins would form a carpet of gold covering five square miles.

KLONDIKE LETTERS.

A letter from Hart Humber, a Canadian miner, who went into the Klondike last spring, has been received. It bears date of June 18th, and gives a number of interesting facts which have not been printed and which throw light on mining methods in the new camp. He writes :

“ After leaving Dyea we had a trip full of hair-breadth escapes, and arrived at Dawson on June 9th. We were about seventy days on the trip. We should have started either a month earlier or later, as we struck the worst time.

“ I start work to-morrow at \$1.50 an hour, and will soon have a job which has been promised to me at an ounce of gold daily. On the boat which leaves to-morrow for St. Michael's are fifty people who

nine months ago were broke, and are now taking out from \$10,000 to \$100,000 each.

“To-night a friend of mine and his pard will leave for a month’s prospecting. Night is the best time for travel, as it is cool and light as day. The mercury stood 82° in the shade to-day, and the sun was out of sight only one and a quarter hours last night. The mosquitoes are something awful. Meals are \$1.50 and drinks 50 cents, but flour is only 12½ cents and bacon 75 cents a pound.

“One of the heaviest items of expense here is to get supplies to the mines. It costs 25 cents per pound to get the stuff packed out.

“This is the richest placer camp ever struck. One Montana man took \$96,000 out of forty-five square feet, and another took \$130,000 out of eighty-five square feet, and other strikes equally rich are reported. Old-timers expect to make big strikes this winter. There are more ways

of making money here than in any place I ever saw."

James Kite, a former resident of Juneau, where he was engaged as a manufacturing jeweller, in a letter to friends by the last overland mail by way of Dyea, says :

"Gold is as common here in Dawson as iron is in Juneau. Everybody has money. There seems to be no limit to this district, and they are striking new diggings every few days for a hundred miles around, and stampedes are the rage. Men with packs on their backs, breaking for some new creek or new discovery, are met at every turn. Some are leaving good pay ground for something that promises better, and in this way the country is being explored and prospected.

"I have built a shop 12 by 20 feet, consisting of a tent drawn over a frame of scantling, and am doing well, working sixteen hours a day, and with all the work I can do. For making a half-ounce ring

out of Klondike gold they pay me \$25. This is the greatest gold camp on record.”

It is estimated that there are 500 former Seattle residents now on the Yukon and Klondike, 300 at Dyea and scattered along the trail, and 400 on the boats now steaming north.

There are at least 5,000 men in Seattle that have the Klondike fever in its most virulent form, and they want to go, but are kept back by business and other interests. The reason assigned for this is the generally good reports of the mines made by returning miners, and by letters from friends at the mines whose every statement can be implicitly relied upon.—*New York Sun.*

KLONDIKE FACTS.

William Sims, who passed two years in Alaska, mining on the Yukon and its tributaries, and was among the first to settle on Bonanza Creek, in replying to inquiries as to the probability of great

suffering among those now going in over the Dyea trail, said that the great majority of those he had been outfitting here were well provided against hardships in the way of provisions and clothing, and, like soldiers, carried their tents with them as protection against storms and bad weather. He said there was no more danger in making this trip than is experienced ordinarily in any mountainous country. Those undertaking the journey now were as well provided against weather and famine as the thousands who had preceded them. Sims was successful in the Klondike, returning with a comfortable amount of dust and still holding interest in claims which are being worked by his partner. He intends to return to the Klondike in the spring.

G. H. Cole says in a letter to his wife from Dawson :

“This is a wonderful country. There is enough gold here to load a steamboat. Lots of men have made all they want

since last fall and gone out. There is hardly a day but one to half a dozen come from the mines with all the gold they can carry. One man had so much he had to get several men to help him carry it out. He gave the mine to a friend to do what he wanted with it. He was a Seattle man.

“There was one poor fellow who sold his claim for \$16,000 and was waiting for the boat. A couple of days before the boat left he was found dead in his bed. He was sleeping in the mill office about one hundred feet from where we were working. Some of the men who have been out to the mines say there is more gold here than they ever saw in their lives, and some of the old miners, who have been in almost all the mining countries in the world, say it beats anything they ever saw. Around some of the camps they have it piled up as farmers have their wheat, and in other camps they have all their cooking utensils full of gold,

standing in corners as if it were dirt. Some are taking out \$100,000 a day. Old miners say there has been enough gold located to dig up for the next twenty years, besides that in the ground that has not been located. I never had better health in my life, but don't know how I look, because I haven't seen myself since I left home. Mosquitoes are so thick that I can't eat, sleep, or write in comfort.

“Well, as it is getting late, not dark (for it has not been dark since we got here), I will have to close my letter; but before closing will say we have very warm weather—no rain, all sunny days.”
—*N. Y. Sun.*

Under date of June 22d Mr. B. E. Janes, a University of California graduate, who has charge of the assay office in the Klondike district, writes from Dawson City:

“Bonanza and El Dorado creeks have turned out very much better than any one expected. Probably \$800,000 has already

been taken out. They will likely turn out many millions. Gold dust is very plentiful and common now. Every one has plenty. Dawson is a very lively camp. About 1,000 men (che-cka-kers) have come in so far. Most of the rich men here now were new men last year. Mr. Lippy, of whom I have written before, has done about the best. Last fall he hadn't money enough to pay his store bill. He came down last night and is going out to-morrow. He has with him over 200 pounds in placer dust. Besides he has left sufficient for running his claim for the next year and paid the expenses of the past year—labor \$1.50 per hour, which makes the expenses very high. His claim is No. 16, El Dorado. There are about thirty or thirty-five 500-foot claims on El Dorado which will average about the same as his. From Nos. 4, 5, and 6, El Dorado, a man named Berry has taken out over \$100,000. On Bonanza there are located 180 claims. Half or two-thirds of them have an ave-

rage market value of \$15,000 to \$30,000. A short time ago a man bought a claim for \$4,500. He set some men to rocking and they took out several hundred to \$1,000 a day each, and he was able to make his payment all right. A claim four numbers below mine sold for \$10,200 to a man who hadn't any money. When the payment became due, which was not in very many days, he sold a half-interest for \$10,000 cash and met his payment, keeping the dump which had been taken out during the winter, containing about \$5,000 net.

“A man on El Dorado has a claim from which he has taken \$20,000. He is now ready to sluice and expects it to yield \$1,000 per day to each man he employs, which will mean several hundred thousand dollars this season.

“The other boys who worked in the store have done very well. Stauf quit in February and has property worth tens of thousands, and has more money to handle than any other man here. Baker, who is still

in the employ of the company, sold his interests for \$7,000 or \$8,000. One man has been buying very heavily. He owes over \$100,000 to be paid very soon, but his original claim on El Dorado is expected to pay \$30,000 to a box length—*i. e.*, 12 feet. I could not believe it till I came up here and saw the amount of gold and handled it.

“The company lost a steamer this spring The *Arctic*, which I came up on last year, wintered near Forty Mile. The water fell very fast in the river after the ice went out, and left the steamer high and dry on big blocks of ice in a slough where the ice had pushed her. In trying to get her out powder was used to break the ice underneath her, and one charge blew her up—that is, loosened the ice suddenly and subjected her to severe strains, so that the bottom leaked very badly. The water began to rise and rose very fast. Finally it got so high and the current so strong through the slough that it carried

the boat out into the river, and she stranded on a bar a mile and a half further down. They have left the hull there, but taken out the machinery and sent it down to be put into a barge. The *Bella*, a boat built last summer, arrived at Forty Mile June 1st, having wintered at Fort Yukon, about eighty miles below Circle City. She had a fair cargo of provisions, which were taken to Dawson, arriving here the 2d, since which time the receipts have been over \$40,000.

“On June 16th the steamer *Alice* arrived at Forty Mile, having wintered at Androsky, near the mouth of the river, about 300 miles this side of St. Michael’s. She brought a good many provisions and other articles. I came up on her to Dawson with my outfit. Labor is \$1 per hour here and scarce. Building material is hard to get, and so the store buildings are progressing slowly.

“I am working in the store at present, receiving the dust for the sales. It keeps

me very busy sometimes. Yesterday the sales were \$4,500. To-night I weighed up a shipment of over 2,000 ounces to go by the *Alice* to-morrow. Our safe is almost as full as it can be, and contains about \$150,000 to \$200,000, deposited in small and large lots for safe-keeping. Heretofore all gold has been taken at \$17 per ounce. With the dirt and all in it, it would not average quite that. I have made twenty-three assays of the placer gold so far.

“The gold in this district is much lower than in the others, some not going \$14, dirt and all. For drafts or currency we pay only \$15.25 for it. The miners don't like it, and think I must be wrong. The other day a man who went out in the winter took out dust which contained El Dorado gold. He got \$17.10 per ounce after it was melted. As soon as the miners heard it they were tickled to death and knew I was wrong. When I met the man I found out the gold included a good

deal of Forty Mile gold, and \$17.10 after melting is only equal to about \$16.50 before, so I think the assays I made will stand, though made on small samples.

“Every day there is a stampede for a new creek. Every little stream for miles around will be located. This country will pay to tie to for money-making. It has been but little prospected.”—*Mining and Scientific Press*.

Mr. J. O. Hestwood, one of the most successful argonauts of 1897, has just returned from Klondike and furnishes a true picture of Alaska as it really is. Mr. Hestwood makes some surprising statements. He says there is gold in Alaska for a hundred thousand miners for a hundred years, yet he points out the surpassing dangers that must be encountered, and graphically describes the four demons that guard the gold as Hardship, Suffering, Disappointment, and Starvation.

“The rainbow of promise is spanning the sky of this nation. Alaska with her icy

diamonds and heart of gold has arisen in her majesty in the north to declare to a disheartened people, in the darkest hour of their national history, that their silver anniversary has long since passed and their golden wedding is at hand.

“Modern or ancient history records nothing so rich in extent as the recent discoveries of gold on the tributaries of the Yukon River. The few millions of dollars recently turned into the banks and smelters of Seattle and San Francisco from the Klondike district are but a slight indication of what is to follow in the near future. When we consider the fact that there is scarcely a shovelful of soil in Alaska and the Northwest Territory that does not yield grains of gold in appreciable quantities, who can compute the value of the golden treasure that the great country will yield in the next few years?

ROOM FOR A HUNDRED THOUSAND MINERS
FOR A HUNDRED YEARS.

“The Yukon River, which forms a great artery flowing through this frozen, rock-ribbed region for two thousand six hundred miles, seems to be a providential highway, opened up for the pioneer gold hunters and their followers, who are numbered by thousands yearly. There is room in that country for a hundred thousand miners for a hundred years. I do not make this statement from what some one else has told me or from what I have read. I speak from actual experience in that land of gold. I have travelled over her rivers of ice and mountains of snow in the springtime for three years. In summer I have scaled her moss-covered mountains, have packed heavy loads across her bald hills, have taken dirt from the mountain top, from the hillside, and from the beds of the streams. I have found Alaska to be pre-eminently a gold-bearing country, and if she enjoyed the genial

warmth of a southern clime, California, South Africa, and Australia in their palmiest days could not be compared to her as a gold-producing region.

“ Four years ago last May, when I first went into that country, little was known of its wonderful possibilities. With a heavy outfit strapped to the backs of Indians, squaws, and dogs, I struggled over the trail from Dyea, on the southern coast of Alaska, to Sheep Camp, twelve miles distant, which was my first camping place. The softening snow, under the sun’s hot rays, rendered travelling difficult, and it was a pitiable sight to watch the half-starved, half-clothed Indians struggling along with their heavy burdens on their backs, climbing the mountain side, frequently breaking through drifted snow and being buried almost out of sight; wading icy streams, falling from foot-logs, and enduring hardships from which death would seem a welcome relief.

“ The endurance of these Indians, or

human beasts of burden, was a constant surprise to me. I remember one young buck whose smallest load was one hundred and fifty pounds. His wife was a young squaw, who, with seventy-five pounds strapped to her back and a four-weeks-old child in her arms, struggled up the Chilkoot Pass, where the declivity was so steep that we were compelled to dig steps in the ice and snow in order to make the ascent. One poor old Indian, I remember, had but half a dozen small caudlefish and one grouse to subsist on for three days.

THE HORRORS OF CHILKOOT PASS.

“We were landed on the summit of Chilkoot Pass, 4,100 feet above the sea level, at Dica, in the midst of a terrific snowstorm, such as takes place frequently on this pass in the spring of the year, endangering the lives of many who attempt going over it. The blinding snow rendered it dangerous in the extreme to attempt the descent from the mountain to-

ward Lake Linderman, the head waters of the Yukon River. To make matters worse, the clouds set down on the mountain top and we dared not leave the camp for more than a few hundred feet, for fear we might lose our footing and be plunged over a precipice or into some yawning chasm in the mountain. A misstep meant death.

“ We took shovels and dug a hole in the ice and snow and spread a tent over it, placing sacks of provisions on the tent to weight it down so the fierce wind could not carry it away. Our supper consisted of a cup of tea and a few crumbs of bread. We then wrapped our blankets about us and lay down to listen to the howling of an Alaskan storm, which seemed to shake the very mountain with its violence.

“ Great glaciers were sleeping all around us, but there was little sleep for the weary travellers that night. The glaciers, however, seemed to be endowed with life and fits of wakefulness, for every now and

then we would hear a crackling sound, followed by a noise as of crashing thunder, and ten thousand tons of sleeping giants would be precipitated from the mountain heights and shattered into icy diamonds to feed the roaring torrents in the chasms far below.

“Morning broke bright and clear. There was no wood on the mountain top and we were compelled to chop up a sled for fuel. This was expensive. We tried to breakfast on a pot of half-cooked beans and a little coffee, which would freeze at the slightest provocation. Two sleds were then loaded with provisions and started down the mountain. They went with a velocity as if fired from a cannon until they struck the ice in Crater Lake, three-quarters of a mile below. After that every foot of ground we gained was by the most excruciating labor a human being can be subjected to.

“Two weeks were consumed in reaching Lake Linderman, eleven miles further on.

Another week had passed before a boat was completed with which we could make our way down the river. While in camp at Lake Linderman one of the party injured his knee, and three times a hunting knife had to be brought into requisition and incisions made. Only after the most careful nursing was he able to proceed on the journey. Men are often taken with snow blindness in that country and lie helpless for days in their tents, unable to cook enough to sustain life. If deserted by their companions in this condition their fate is sealed.

STRANDED AND STARVING IN THE
WILDERNESS.

“After reaching Lake Bennett, the second of the great chain of lakes at the head waters of the Yukon, on the left side of the lake we beheld a man jumping up and down and motioning us that way. A few minutes later we made a landing, took him into the boat, and learned that he had

been three days without food and shelter. His boat had been wrecked and all his provisions lost. We rescued him from starvation and passed on to the lower end of the lake. Here we went into camp on the shore, near where three men the day before had lost their boat and all their provisions, with the exception of a few pounds of beans and a sack of flour.

“From this point on we encountered few difficulties in the way of river transportation until we reached Forty Mile, which is located where the 141st meridian crosses the Yukon. Between Marsh Lake and Lake Le Barge there are sixty miles of river in which occur the Grand Cañon and the White Horse Rapids. Before reaching Grand Cañon the river is wide and smooth, when all at once the water is forced through the cañon at incredible speed. The cañon is a crevice where the mountain has been split in twain, apparently, to make an outlet for the water. The walls are perpendicular on either side,

rising to a height of one hundred feet. Three miles below are the White Horse Rapids, the most dangerous portion of the Yukon River.

“ At this point the water, being forced over great rocks which obstruct the stream, appears like ten thousand steeds of snowy whiteness rushing into battle. It is always advisable to keep well to the left-hand shore at this point, letting the boat down with a long rope from the top of a precipitous bank on the left until the falls are reached, then portage all the provisions about three hundred yards below the falls ; then, making sure that the long ropes are securely fastened to the boat, push it out into the maddened current and let it take its course, keeping the rope free from all obstructions along the shore. When Five Finger Rapids are reached, pass through the right-hand opening, and six miles below, at Rink Rapids, keep near the right-hand bank.

A DREARY TRAIL OF LONELY GRAVES.

“Many lives have been lost at these various points of danger, and along this section of the river many graves dot the shore where unfortunates have been laid in their last resting place. Niches cut in the frozen ground mark the lonely graves of fathers and sons whose return is waited for in vain by loved ones in the realm of civilization. It is a sad thing indeed to lay your friends away in that desolate region, where only wild beasts congregate to mourn a requiem over their graves. I simply mention these facts in order that any one who thinks of going into that country may know beforehand that the search for gold there is preceded by hardships and privations which they little dream of unless they have penetrated the American land of the midnight sun.”—
New York World.

ESTIMATED GOLD PRODUCT OF 1897.

“That gold exists in large quantities in the newly discovered Klondike district is sufficiently proven by the large amount recently brought out by the steamship companies, and miners returning to the States who went into the district within the last eighteen months. So far \$1,500,000 in gold from the Klondike district has been deposited at the mints and assay offices of the United States, and from information now at hand there are substantial reasons for believing that from \$3,000,000 to \$4,000,000 additional will be brought out by the steamers and returning miners sailing from St. Michael’s the last of September or early October next. One of the steamship companies states that it expects to bring out about \$2,000,000 on its steamer sailing from St. Michael’s September 30th, and has asked the government to have a revenue cutter act as a convoy through the Behring Sea. In view of the facts

above stated, I am justified in estimating that the Klondike district will augment the world's gold supply in 1897 nearly \$6,000,000.

“The gold product of the Dominion of Canada for 1896, as estimated by Dr. G. M. Dawson, director of the geological survey of that country, was \$2,810,000. Of this sum the Yukon placers within British territory were credited with a production of \$355,000. The total product of that country for 1897 has, therefore, been estimated at \$10,000,000, an increase over 1896 of \$7,200,000. From this the richness of the newly discovered gold fields of the Klondike is evident.

“In this connection it is important to know what will be the probable increase in the several countries of the world, and for the purpose of comparison, based upon information received, the following table of the gold product of the United States, Australia, Africa, Mexico, the Dominion of Canada, Russia, and British India for

1896, and the estimated product of these countries for 1897, is here given:

	1896.	1897.	Increase
United States....	\$53,000,000	\$60,000,000	\$7,000,000
Australia.....	46,250,000	52,000,000	5,750,000
Africa.....	44,000,000	56,000,000	12,000,000
Mexico.....	7,000,000	9,000,000	2,000,000
Dom. of Canada..	2,810,000	10,000,000	7,190,000
Russia.....	22,000,000	25,000,000	3,000,000
British India.....	5,825,000	7,000,000	1,175,000
	<hr/>	<hr/>	<hr/>
Totals.....	\$180,885,000	\$219,000,000	\$38,115,000

“The world’s gold product for 1896 is estimated to have been \$205,000,000. In justification of the above estimate of the increase in the countries mentioned, I may remark that of the United States is based upon the deposits at the mints and assay offices for the first six months of the year, which clearly indicate a largely increased production, and that the increase for the year will aggregate \$7,000,000. The gold product of Africa for 1896 is estimated to have been \$44,000,000. For the first six months of 1897 the output of the Wit-

witwatersrandt mines, as shown by official returns, was 1,338,431 ounces, an increase of 333,928 ounces as compared with the first six months of 1896. There is no doubt that the rate of production in the Witwatersrandt mines will be maintained for the remainder of the year, and their output of gold for 1897 will be fully \$12,000,000 greater than that of 1896.

“The deposits of gold at the Australian mints for the first five months of the year clearly indicate a substantial gain in 1897 over 1896. Upon the basis of the deposits for the first five months at the mints, the *Australian Insurance and Banking Record* for the month of June estimates that the total gold product for 1897 of the several colonies will aggregate 2,700,000 ounces, of the value of \$52,550,000. This would be an increase of \$5,750,000 over the product of 1896.

“The gold product of Mexico for 1896 is estimated to have been \$7,000,000. The information received indicates that the

product for 1897 will approximate \$9,000,000, an increase of \$2,000,000.

“The Russian product for 1896 was \$22,000,000; for 1897 it is estimated at \$25,000,000, an increase of \$3,000,000.

“The gold product of British India for 1896, from official information received, is estimated at \$5,825,000. The returns of the mines for the first six months of 1897 indicate an increased production over 1896 of \$1,200,000.

“From the data above given, it is safe to estimate that the seven countries above named will show an increase in their gold output for 1897 over 1896 of \$38,700,000, and that the world's product for 1897 can therefore be estimated at not less than \$240,000,000. There is no doubt that the world's product of gold will continue to increase for a number of years to come, as new mines will be opened up in all parts of the world, and, with improved appliances for mining and methods of extracting the gold contained in the ores,

I believe that by the close of the present century the world's gold product will closely approximate, if not exceed, \$300,000,000.

“ I have spoken above of the addition likely to be made in 1897 to the world's stock of gold by the Klondike district, by the Transvaal, by the United States, Australia, Russia, Mexico, India, etc. Of all these gold-producing countries, of course the Klondike is at present the one of most absorbing interest. It strikes the imagination to-day as California did the minds of the Forty-niners. It will add in 1897 possibly \$6,000,000 to the gold treasure of the world.

INFLUENCE OF THE ADDITION.

“ Now as to the influence of such addition to the world's gold. The influence it will exert depends mainly on how many years the Klondike district shall continue a producer, and how large its annual increment to the world's existing stock of

gold shall be. There is every reason to believe that Alaska and the adjacent British territory are possibly as rich in gold as was California or Australia when first discovered. I have estimated that the Klondike district will in 1897 produce \$6,000,000 worth of gold. It will add to this product from year to year probably for a minimum of one or two decades. And whether the gold comes from American or British territory is a matter of indifference except to the owners and, to some extent, to the countries producing it. The effect of the increase on the economic condition of mankind, on the rate of discount, the rate of interest, the rate of wages, on prices and on monetary policies, of a newly-discovered gold field of wonderful richness, is the same, whether the field be located in American, British, or Chinese territory.

“Now, the first influence that the new addition to the world’s existing stock of gold will have will be felt by silver. In

fact, it has already been felt by it. Gold is the natural competitor—we might almost say antagonist—of silver as a monetary medium, and every ounce of gold newly placed on the market deprives from $17\frac{1}{2}$ to 35 ounces of silver of a possible employment as money that it might have. I say this because gold, weight for weight, is now worth thirty-six and six-tenths times as much as silver, and because, at most, half of the gold discovered finds industrial employment.

“The new additions to the world’s stock of gold, whether they come from the Klondike, Cripple Creek, or the Transvaal, from India, Australia, or Russia, will render bimetallism by the United States alone more difficult and more improbable than ever, and will even seriously imperil the slender chances that international bimetallism now has.

“Bimetallists have long been asking the question where the gold is to be found that is to take the place of the silver de-

monetized. The discoveries at Cripple Creek, in the Transvaal, and on the Klondike are a sufficient answer to this question. The mines of the world have been turning out gold of late years in greater profusion than ever before. The year 1893 marks an epoch in this respect. In the report of the Director of the Mint upon the production of the precious metals in the United States during the calendar year 1893 I called attention to the fact that the world's output of gold in that year was the largest in history, amounting to \$155,522,000, and that it was 16.08 per cent greater than the annual average of the period of the greatest productiveness of the Californian and Australian gold mines. And in the report of the same series of the calendar year 1894 I remarked that the value of the world's production of gold in that year not only equalled the average value of both gold and silver in the period 1861-1865, but exceeded it by \$11,204,600, and that the

probability expressed by me in 1893 that the value of the world's output of gold in 1895 and 1896 would equal that of both metals in the years immediately preceding the beginning of the depreciation of silver had been changed into a certainty by the events of 1894, since the average annual yield of gold and silver of all countries in the period 1866-1873 exceeded that of gold alone in 1894 by less than \$11,000,000. If the production of gold in 1897 reaches the figure, which I confidently believe it will, of \$240,000,000, it will exceed the average yearly value of both the gold and silver product of the world for the period of eight years—1866 to 1873—which just preceded the beginning of the depreciation of silver—viz., \$190,831,000—by over \$50,000,000.

“Leaving out of consideration, therefore, the industrial employment of the two metals, the world now annually produces in gold alone some \$50,000,000 more for monetary uses than it did in both gold

and silver during the eight years (on an average) that preceded the beginning of the depreciation of the latter metal.

“On the supposition that silver has entirely ceased to be coined, the world is richer in 1897 in material for the coinage of full legal tender or standard money than it was at any former period of the world’s history, and the indications are that it will grow richer in this respect in every succeeding year for decades to come.

“Hence my belief that the first effect of the new additions of gold to the stock already in existence will be an effect detrimental to bimetallism, whether national or international. There are some, I know, who think that the increased production of gold will have the contrary effect and that it will lead to the remonetization of silver. They base their argument on this: that the increased production of gold will be followed by a depreciation of its value. This might be

if the new demand for gold did not increase more rapidly than the supply. But the former is likely to exceed the latter.

NO LIMIT TO THE DEMAND FOR GOLD.

“ There is, in fact, at the present time, no limit to the demand for gold. The tendency of nations is toward the single gold standard. Apart from the United States, there is not, I believe, a country on the face of the earth that would not adopt gold monometallism, if it had the ability to do so, with silver as a subsidiary or token coinage. There is not a country in Europe with any full legal tender silver coins but would replace them by gold coins, if it could do so without too great a sacrifice. Germany would gladly put \$100,000,000 in circulation, instead of its silver thalers. France and all the countries of the Latin Union would replace their full legal tender 5-franc pieces by gold, could they easily get it. Russia's demand for gold is unbounded. Austria-Hungary cannot get

enough, and so of every other country in Europe. Japan wants gold now that it has adopted the gold standard. Even China shows an inclination to follow the example of its conqueror, but that, of course, is out of the question. All South America is crying for gold. Chili wants it, Colombia wants it, Peru wants it. Venezuela has some, but wants more. Central America wants it. Even Mexico, the last stronghold of silver, is feeling the burdensomeness of its present system in the height of its rate of exchange.

“More than this. The nations of Europe want gold, not only as currency, but as war material, for they have come to understand that gold—gold, not all kinds of money—is the sinew of war. Germany has a gold fund locked up in a fortress, and the accumulations of that metal made by other governments, ostensibly for different purposes, are really only so much war material, which the nations of Europe can no more dispense with than they can

with a standing army or a navy. And where no such fund can be actually pointed to, as in England, there is felt the confidence that it can be had at any time on the credit of the nation. Then it must be remembered that all great loans are now made and must be made in gold. Only home loans are made in any other medium. This disposes of the contention that there is likely to be any depreciation in the value of gold consequent on the increased supply.

AS TO PRICES.

“Will the new additions to the gold stock of the world have any effect on prices? Should the increase of the world’s production due to the yield of gold in the Klondike district, as well as in the Transvaal, be any way near as large as that due to the mines of California and Australia in the years immediately succeeding the discovery of the metal in those countries, it probably will, in time, especially if the

new additions bear the same proportion to the already existing stock of gold in the world as did those of California and Australia. But any increase of prices that may thereby be caused will be gradual and may not be noticed for some years to come. It cannot be noticed until gold begins to depreciate in value, and of that there is no present prospect.

“Shortly after the discovery of gold in California and Australia there was a very marked rise in the general level of prices, which writers on the subject have generally attributed to the decline of the value of gold at that time. French publicists were the first to call attention to this phenomenon. This was in 1851, 1852, and 1853. Chevalier wrote about it in 1857. In 1858 another eminent French writer published a book, entitled ‘The Question of Gold,’ in which he showed the greatness of the rise and the consequences, favorable or otherwise, which it might have for individuals or for states. The follow-

ing year Chevalier took up the subject anew and endeavored to forecast the commercial and social effects which the decline of gold might have in the future. In England several statisticians noticed the same depreciation about the same time. Newmarch and MacCulloch doubted it. But in 1863 Stanley Jevons demonstrated it in his essay, 'A Serious Fall in the Value of Gold Ascertained and its Social Effects Set Forth.' Ten years later De Foville, after a long and laborious investigation, came also to the conclusion that there had been a decrease in the purchasing power of money.

“ While the value of gold was thus declining there was a sudden and extraordinary increase in the supply of the metal. From 1831 to 1840 the annual production had not exceeded, on an average, 20,289 kilogrammes, or \$13,484,000. From 1841 to 1850, after the rich auriferous deposits of the Ural, and especially of Siberia, had begun to be worked, the average annual

product rose to 54,759 kilogrammes, or \$36,393,000. The annual average was abruptly raised by the discovery of the gold diggings of California and Australia to 199,388 kilogrammes, or \$132,513,000, from 1851 to 1855, and to an annual average of 101,750 kilogrammes, or \$134,083,000, from 1856 to 1860. The production subsequently averaged 185,057 kilogrammes, or \$122,989,000, from 1861 to 1865, and 195,026 kilogrammes, or \$129,614,000, from 1866 to 1870. From 1493, that is, from the discovery of America, until 1850—that is, in three hundred and fifty-seven years—the quantity produced was 4,752,070 kilogrammes, or \$3,158,223,000. From 1851 to 1870, in twenty years, the quantity of gold produced was 3,905,205 kilogrammes, or \$2,595,996,000. This newly extracted gold, therefore, represented more than eighty-two per cent of the production anterior to 1850, and more than forty-five per cent of the total production after 1493.

“It is easy to see that such a revolution

in the conditions of production caused a decline of gold which became manifest in a rise of prices.

“The rise of prices was general at first. In 1858, according to Levasseur, the price of wheat, compared with its price in 1848, had doubled; the price of natural products, compared with the price in 1847, had increased 67.19 per cent; the price of manufactured articles, compared with that of 1847, had risen 14.94 per cent; the average prices of all commodities had increased 41.61 per cent. The learned writer took care to remark that the rise of prices was not due exclusively to the decline of gold. He admitted, in the first place, that war and famine had caused a rise of about twenty per cent in the prices of natural as distinguished from manufactured products, and of two per cent in manufactured products, and that, besides, speculation in 1856 had swollen all prices to the extent of five per cent. Leaving out of consideration these transitory causes, natural pro-

ducts had increased, in 1858, by 42.19 per cent, manufactured products by 7.94 per cent, all commodities considered as a whole by an average of twenty-five per cent. From this rise of 25 per cent it was necessary to deduct 5 per cent in order to take into account the effects of the development of industry and of the increase of the number of consumers. As a final result he found that the greater abundance of gold had caused a rise of 20 per cent in prices. The decline in the value of money thus amounted to 16.67 per cent.

“ In 1863 Stanley Jevons reached a conclusion almost the same. He believed that the decline of gold could not be less than 15 per cent, and that it might be more. In 1863, or thereabouts, the consequences of the decline began to be less apparent than in 1858. The general rise of prices was succeeded by movements of a very different kind. Several causes, which M. Levasseur had already drawn attention to, began either to counteract or to strengthen

the effects of the plentifulness of the standard metal, so that in the case of certain commodities there came a decline instead of a rise, while in others the decline became greater still.

“In 1873, when M. de Foville published the results of his investigations concerning prices, the movement, which in 1850 was faintly outlined, became very marked and well defined. That writer showed that the prices of 1873 presented, as compared with those of half a century before, a rise of 90 per cent for foods of animal origin, of 30 per cent for vegetable foods, and 45 per cent for domestic liquors. He showed, on the other hand, a decline of prices of 35 per cent for mineral products, of 50 per cent for textiles, and 45 per cent for chemical products, glassware, and paper.

“By a combination of the rises and declines of prices, according to the method which he called that of budget averages, M. de Foville came to the conclusion that

there had been an increase of 33 per cent in the prices of commodities, corresponding to a decrease of 25 per cent in the purchasing power of money, from the period 1820-25 to 1870-75.

PURCHASING POWER.

“It will be remarked that in this period of 50 years the quantity of gold produced almost trebled as compared with the 332 years between 1493 and 1825. The quantities produced amounted in 1825 to 3,926,510 kilogrammes, or \$2,609,558,000, and in 1875 to 9,523,696 kilogrammes, or \$6,329,448,000. Yet the decline of gold was only 25 per cent. It must be remarked, however, that this depreciation of 25 per cent was due to a combination of causes of various kinds, and was not due entirely to the abundance of gold. Between 1825 and 1875 an economic revolution was accomplished in the world, greater than most political revolutions. To describe the revolution just referred to would be to write

the industrial, commercial, financial, and monetary history of those 50 years.

“Judging from the effect of the gold discoveries in California and Australia in gradually raising general prices from 1850 to 1873, or thereabouts, it would be only natural to conclude that the effect of the now rapidly increasing additions made annually to the world’s product in the Transvaal, Australia, the United States, Russia, and in the Klondike district would have a similar effect, providing they bore something like the same proportion to the already existing stock of gold as did those of California and Australia to the stock already on hand in 1850. Since 1871 the production of gold has been about 6,500,000 kilogrammes, or \$3,455,920,000, or will be by the end of the present year. Since 1886 alone, the product has been about 2,718,000 kilogrammes, or \$1,806,383,000. The gold product from 1886 to 1897 has been nearly 25 per cent of the total output of the gold mines of

the world from 1493 to 1885, and the total product of gold from 1871 to 1897 has been approximately 60 per cent of the world's product of that metal from the discovery of America to 1870.

“Such an enormous production of gold since 1870 would lead one to believe that there would necessarily be caused thereby a great rise of prices. But as a matter of fact the contrary has, on the whole, been the case. A general decline of prices began in 1873, and, notwithstanding the vast increase in the world's stock of gold just referred to, the decline still continues. Economists and statisticians of great merit believe that this general decline is due to what they call the appreciation of gold, although how there can be an appreciation of gold when the world's output of the metal since 1871 has been about sixty per cent of its total product from 1493 to 1870 they do not explain.

“This vast increase in the gold stock of the world has found expression in the low-

ness of the rate of discount, in the facility with which municipalities and states effect loans of great magnitude at a rate of interest lower than ever before in the history of the world, and in the vast accumulation of gold and silver bullion in the great banks of the world. The fact that prices have not risen as a consequence of the increase is undoubted evidence that the causes of their decline have their source elsewhere than in the scarcity of gold or of money in general. For, as remarked above, there is now more gold available for monetary purposes than there was gold and silver before the decline of prices began. Not only this, but the substitutes for money with which every business man is familiar have vastly increased since 1873. With the development of credit that now obtains in the world the quantity of the media of circulation can have no controlling influence on the prices of commodities.

“ I know it is almost a despairing view to

take that, notwithstanding the vast additions yearly making to the gold stock of the world, there is no immediate prospect of a general rise in prices from that cause; and yet, considering the simple fact that the addition to the world's gold stock since 1871 has been nearly sixty per cent of the world's output of that metal from the discovery of America up to 1870, and that the product since 1886 up to the end of 1897 (an estimate of \$240,000,000 being made for that year) was nearly twenty-five per cent of the total product from 1493 to 1885, I can reach no other conclusion. The great addition to the world's stock of gold since 1873 is a demonstrated fact, but so also is the continued decline in prices.

“ The advocates of silver maintain that the decline is due to the demonetization of that metal and the consequent scarcity of money. Yet money was never more plentiful, rates of discount and interest never lower, accumulation in the banks never greater.

“These facts conclusively refute their contention.

“May not the true cause be found in the stability of the value of gold—the most desirable quality in a money metal—and in the improvement in technical processes and the cheapening of transportation—an improvement and a cheapening still going on—as well as in the almost universal substitution of machine for human labor?”—*R. E. Preston, Director of the Mint at Washington, in New York Herald.*

NEW GOLD FIELDS.

Among the miners who are outfitting for the Klondike is Mr. M. T. Fitzgerald. Replying to an inquiry about the Northwest Territories, he said: “The Klondike is but a speck on the map of that great gold country. Last season I spent six months in the Peace River country in the interest of the Forty-third Mining Company of Ottawa, going in the capacity of a prospector. Our exploring party in-

cluded thirty-one men and sixty-three horses. Ashcroft, British Columbia, on the Canadian Pacific Railroad, was the starting point, thence over the Cariboo wagon road to the Quesnelle River, two hundred and twenty miles. Crossing Upper Frazer River, we travelled north-westerly, following the old telegraph trail to Stewart Lake, stopping at Fort St. James, 200 miles from Quesnelle and 430 miles from Ashcroft.

“ We struck the gold country at Horsefly, and were in it the rest of the journey. Crossing Stewart Lake at Fort James, we took the trail to Manson Creek, travelling 150 miles to the Omineca country, where Col. Wright, of Ottawa, and Capt. Black, of Victoria, are opening up large hydraulic mines for their respective companies. Here coarse gold is found together with nuggets of silver, being the only place in America outside of Mexico where silver in this form has been discovered. Camping at Black Jack, we prospected the

country and made a number of locations on which machinery has since been placed and mines are now in operation.

“ Breaking camp at Black Jack, we crossed the Omineca River into an unexplored region, travelling north 270 miles from Omineca, or 840 miles northwest of Ashcroft, our initial point. This brought us into the Peace River country, where we spent the balance of the season prospecting and locating mining claims.

“ We took up 2,500 acres of placer ground along the Peace River. At a depth of 18 feet we struck bed rock and found the ground to prospect \$300 to the cubic yard, and in some instances as high as \$600 were obtained. The largest results were obtained on the river bars. The gold is coarse and is what is termed barley gold, with occasional nuggets worth from \$16 to \$18. Peace River is about the size of Frazer at Quesnelle, fully half a mile wide, flowing east, through a low country, for a distance

fully 1,500 miles, into the Great Slave, with its source on the eastern slope of what we termed spurs of the Rocky Mountains and far south of the Klondike and Stewart Rivers. It will be the first county to receive the overflow from Klondike and Yukon, and its record will prove interesting.

“While the season is short, like that of the Klondike, there are some advantages possessed over that country. The ground never freezes to such depth, and mining is much easier. What is known as the Arctic Divide lies south of the Peace River, but the vegetation grows quite rank in the few short months of summer. Such vegetables as turnips, onions, and radishes have been grown along the shores of Stewart Lake.

“A wandering band of Indians known as Foxes, very peacefully disposed, live in this country, trapping and hunting for the Hudson Bay Company. I purpose prospecting the country between the

Klondike and Peace rivers, and I will go out well prepared for the journey. The Northwest Territories are now surprising the world, and they have still greater surprises in store."—*New York Sun*.

PROF. EMMONS ON KLONDIKE.

The Klondike placer mines are only gathering the dust washed off Nature's great gold reserve in the Alaskan Mountains. This dust is found in the gravel of the little streams. It comes from a formation called the conglomerate, which is incomparably richer in nuggets and particles of gold than the gravel.

When the miners find it no longer profitable to wash out the gravel, they can attack the conglomerate, where they will be able to accomplish something by hand labor.

Finally, there is the original source of gold—the veins in the hills. These must be of enormous value. They must lie un-

touched until the proper machinery for obtaining the gold is erected.

A clear, scientific, and authoritative explanation of the geological conditions of the Klondike and neighboring gold-bearing rocks is given here.

It was furnished by Professor S. F. Emmons, of the United States Geological Survey, who also made a rough sketch illustrating the formation of the gold-bearing rocks and soil, on which the accompanying picture was based.

Professor Emmons said:

“The real mass of golden wealth in Alaska remains as yet untouched. It lies in the virgin rocks, from which the particles found in the river gravels now being washed by the Klondike miners have been torn by the erosion of streams. These particles, being heavy, have been deposited by the streams which carried the lighter matter onward to the ocean, thus forming by gradual accumulation a sort of auriferous concentrate. Many of the bits, espe-

cially in certain localities, are big enough to be called nuggets.

“In spots the gravels are so rich that, as we have all heard, many ounces of the yellow metal are obtained from the washing of a single panful. That is what is making the people so wild—the prospect of picking money out of the dirt by the handful literally.

“But all this is merely the skimming of grease from the pot; the soup remains, and precious rich soup it is. The bulk of the wealth is in the rocks of the hills, waiting only for proper machinery to take it out. For you must remember that the gold was originally stored in veins of the rocks, which are of an exceedingly ancient formation. Nobody can say how many millions of years ago the metal was put there, but it must have been an enormously long time back.

“The streams wore away the rocks, carrying gold with them, and this process continued for ages, making immense de-

posits of rich, gold-bearing gravels. Eventually these deposits were themselves transformed into rock—a sort of conglomerate in which pebbles small and big are mixed with what was once sand. To-day the strata composed of this conglomerate are of immense extent and unknown thickness. The formation closely resembles that of the auriferous ‘banket’ or pudding stone of the South African gold fields; but the South African pudding stone was in far remote antiquity a sea beach, whereas the Alaskan formation is a deposit made by streams, as I have said.

“In a later epoch the stream continued to gnaw away at the hills, bringing down more gold and leaving it behind in the gravels of their bottoms. It is these comparatively modern rivers which are responsible for the pay dirt of the Klondike district and of all that region. Naturally, because it was easily got at and worked, the miners have struck this surface alluvium first. The streams at various times

have followed different courses, and it is in the gravels of the dry and disused channels that the gold miners dig with such fabulous profit.

“ You will observe from what I have said that the gold of that region exists under three widely different conditions—in the gravels, in the conglomerate or pudding stone, and in the ancient rocks of the hills. When the modern stream deposits, now being worked, are used up, the miner can tackle the conglomerate, which represents the gravels of ages ago. Finally, when they are provided with the requisite machinery, they will be in a position to attack the masses of yellow wealth that are stored in the veins of the mountains. At present we can hardly consider that the first bite has been taken of the golden feast which Alaska offers to hungry man.”
—*New York Journal*.

THE CLIMATE.

The climate is described in a recent circular issued by the Government Weather Bureau at Washington. The data and observations were obtained from the United States Coast and Geodetic Survey after six months of work on the Yukon, not far from the site of the recent gold discoveries.

Alaska is described as a land of striking contrasts in both climate and topography. When the sun shines the atmosphere is remarkably clear and the scenic effects are magnificent.

The climate in the interior, including practically all of the country except a narrow fringe of coast margin, is one of extreme rigor in winter, with a brief but relatively hot summer.

In the Klondike region in midwinter the sun rises from 9:30 to 10 A.M. and sets from 2 to 3 P.M., the total length of daylight being about four hours. The

sun then rises but a few degrees above the horizon, and is wholly obscured on many days.

The observations of the United States Survey showed that the greatest continuous cold occurred in February, 1890, when the daily mean temperature for five consecutive days was 47° below zero. The closed season of 1889-90 continued 168 days.

The mean temperature of the months from October, 1889, to April, 1890, were: October, 33° above zero; November, 8° above; December, 11° below; January, 17° below; February, 15° below; March, 6° above; April, 20° above. The lowest temperature registered was 59° below zero in January.

In the interior of Alaska winter sets in as early as September, when snowstorms may be expected in the mountains and passes. Headway during one of these storms is impossible, and the traveller who is overtaken is fortunate if he escapes

with his life. Snowstorms of great severity may occur in any month from September to May.

The changes of temperature from winter to summer are rapid. In May the sun rises at 3 A.M. and sets at 9 P.M. In June it rises at 1:30 A.M. and sets at 10:30 P.M., giving twenty hours of daylight and diffuse twilight in the remainder of the time.

The mean summer temperature of the interior ranges between 60° and 70°, according to elevation.—*N. Y. World.*

GOLD FACTS.

The first discovery of gold on the Klondike was made in the middle of August, 1896, by George Cormack.

The only way into and out of the Klondike in winter is by way of Juneau.

The only way to live is to imitate the Indians in dress and habit. It is useless to wear leather or gum boots. Good moccasins are absolutely necessary.

The colder it is the better the travelling.

When it is very cold there is no wind, and the wind is hard to bear.

Indian guides are necessary, to go ahead of the dogs and prepare the camp for night.

In the summer the sun rises early and sets late, and there are only a few hours when it is not shining directly on Alaska.

In the winter the sun shines for a short time only each day.

It is 2,500 miles from San Francisco to St. Michael's.

It is 1,895 miles from St. Michael's to Dawson City.

In summer the weather is warm and tent life is comfortable. The winter lasts nine months.

There are two routes by which to reach Dawson City—one by St. Michael's Island and the other via Juneau.

By steamer it costs \$150 to go from Frisco to Dawson City.

Dogs are worth their weight in gold. A

good long-haired dog sells from \$150 to \$200.

Skates might be used to good advantage at times.

The Yukon River is closed by ice from November to the latter part of May.

On the Klondike the thermometer goes as low as 60° below zero.

There is a great variety of berries to be found all through the country in summer.

Game is very scarce. Vegetables of the hardier sort can be raised.

Stock can be kept by using care in providing abundantly with feed by ensilage or curing natural-grass hay and by housing them in the winter.

In summer abundance of green grass can be found near the rivers.

In appearance the natives are like the North American Indians, only more lithe and active, with very small feet and hands.

Gold was first discovered in the vicinity

of Sitka by Frank Mahoney, Edward Doyle, and William Dunlay in 1873.

The first American traders to engage in the Yukon trade were members of the Western Union Telegraph expedition.

With the first breath of spring the up-river people prepare for their annual meeting with their friends from the outside world.

At a distance of 600 miles from the ocean the Yukon River is more than a mile wide.

The Klondike mining region is in the latitude of Iceland and lower Greenland.

The longitude of St. Michael's is further west than that of Honolulu.—*San Francisco Examiner*.

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