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NOTED

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B. D. STEWART
Commissioner of Mines

THE KAIYUH HILLS and THE STUYAHOK-MARSHALL DISTRICT

By Joesting

The mining districts along the Yukon River below Ruby were visited

from October 6-16, 1938. Under the circumstances it was not possible to visit the Kaiyuh Hills; information on the prospecting in this region being obtained in Ruby and Nulato.

The writer returned from Poorman in time to go down the Yukon with Mr. James Gordon, who was carrying the last fourth class mail of the season from Nenana to towns as far as Marshall. A 16-foot outboard powered boat was used for the trip. Through the kind cooperation of Mr. Gordon, extra stops were made, so that all mining operations accessible from the river were visited. Because the trip was made late in the season, and under circumstances that did not permit spending much time in any locality, the geology of the country received little attention. However, it is felt that the trip was worthwhile if only for the purpose of gathering data on present operations in mineralized country that is only slightly known, but potentially important.

A tabulation of mining and prospecting activities is appended. The individual mining operations are covered by means of the Placer Mining Forms which were forwarded to the Territorial Department of Mines at Juneau.

Prospecting has been going on for several years on Camp and Dome Creeks, in the northern part of the Kaiyuh Hills. The ground on Camp Creek is reported to be partly thawed, and from 6 to 20 feet deep. The pay is said to be up to 1,000 feet wide. A hydraulic outfit, including tractor with bulldozer and hydraulic pipe, will be taken in next summer. Prospects have been found on Dome Creek, but the ground is said to be deep and wet.

There has been no prospecting in the Anvik River region for several years, according to information obtained at Anvik.

The dragline operations of Vance Hitt & Co. are on Flat Creek, tributary to the upper Stuyahok River. The camp is reached from a landing near the mouth of Tuckers Slough, over a partly graded cat road. The placer deposit yields only

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30¢ per cu. yd. as worked, but the fine, easily washed gravel and generally favorable working conditions allow a large volume of material to be handled, with little time lost due to breakdowns. Some fine gold is lost in the concentrates which are discarded with no treatment other than panning. Prospect drilling is carried on haphazardly. The drill holes are not located, and if a hole indicates good pay several more are put down around it, in the hope of finding more good pay. The drill values do not check with recovered values and are generally much lower. No drill factor has been obtained. Thus the drilling is of no value other than to determine depths, and to some extent where the limits of pay lie.

The source of the gold and the method of deposition are not entirely apparent from brief inspection. The gravel is much finer than that generally found in placer deposits in the interior, and consists of well rounded greenstone, basalt (?), porphyry, granite and a very subordinate amount of quartz. The gold is fine, flat, and rough in part. A possible source of the gold is a feldspar porphyry dike (?), fresh pieces of which were seen in the tailings from an old cut in Hazel Gulch, a right limit tributary of Flat Creek just above the present cut. The bedrock in the old cut is not visible. If the placer gold has its main source in the Hazel Creek area, then the placer deposits in the Stuyahok River at the mouth of Flat Creek ^{are likely to} ~~may~~ be low grade. However, there may be other sources, either from porphyry dikes or from veins.

The Yukon Mining Co. started mining last summer on Bobtail Creek, tributary to Kako Creek, and after some delays due to unsuitable equipment, got in about half a season's mining. If their present plant is satisfactory, the operation should be profitable. There is some doubt whether the gravel, which contains much sticky clay, can be washed thoroughly with the elevated boxes and dragline now used. The creek was drilled, but drill values do not check with those recovered by mining. The former are much lower, but not uniformly so. The trouble may be due to faulty prospecting technique. No drill factor was used. This company has optioned

Montezuma Creek, a nearby tributary to Kako Creek, and will drill there this fall. If prospecting results are satisfactory, they probably will start mining there in the summer of 1939.

The equipment was hauled in across country by cats and godevils from Kako Creek landing to the camp, a distance of five miles. As one set of cat tracks became soft due to wearing away of the moss and thawing, a new trail was broken. Some delay was occasioned by cats getting mired in the swampy ground.

The bedrock on Bobtail Creek is a much decomposed, medium coarse conglomerate, with a few lenses of soft, light colored coarse sandstone. The conglomerate cobbles are sandstone, quartz, and granite. Close folding and minor faults are prevalent. The strike is E-W and the dip is to the south. The conglomerate is cut by numerous small decomposed porphyry dikes. The gravel is fine, and consists mainly of greenstone and quartzite, with much clay and very little quartz. The gold which occurs on bedrock is mostly fine and flat, and some of it is rough. On Montezuma Creek the bedrock is said to be porphyry, and the gold is fine, shotty and well worn. No assay returns were available from either creek. Both the porphyry and the conglomerate may be sources of the placer gold. The possibility of other sources must also be considered.

The operation of the Willow Creek Mining Co. is about 10 miles southeast of Marshall. Supplies are landed at the mouth of Spruce Creek in Poltes Slough, from which a good road, travers^able by auto, leads to the camp four miles inland. The ground being mined averages about \$1.25 a bedrock foot, or \$1.15 a cu. yd. The operation is profitable, although the large boulders and thick gravel overburden make mining costs high.

The gravel on Willow Creek is coarse, and is subangular to rounded, instead of fine and well rounded as on Flat, Kako and Wilson Creeks. On Willow Creek the gold is coarse and rough in part, and occurs throughout the lower eight feet of

the gravel instead of on bedrock as in the other creeks. The gravel is composed mainly of greenstone, with some granite and a few quartz pebbles. Boulders of greenstone up to three feet in diameter are common. The bedrock is poorly exposed, but appears to be a decomposed argillite. Granitic rocks are said to outcrop at the head of the creek, and the upper creek undoubtedly cuts a belt of greenstone.

On lower Disappointment Creek, tributary to Wilson Creek, mining by the Wilson Creek Mining Co. was started last summer. The supplies were freighted from the landing at Marshall, a distance of eight miles, over a cat road built with the help of the Road Commission. The road runs mainly over bare tundra. Several small bridges were built and some grading was done. The camp buildings are constructed of 3/4-inch Vaporseal Cellotex on 2 X 4 framing, and appear to be more comfortable than the average.

No preliminary prospecting was done, other than that done incidentally by the small opencuts of previous miners. For this reason the limits of pay are not known, and it is likely that some sidepay on both sides of the cut will not be recovered. Some prospect drilling is scheduled for next season. As the ground is easy to work, the operation should be profitable if the values hold up.

The gravel on Disappointment Creek is medium fine, subangular to rounded, and consists of greenstone, granite, argillite, fine grained dike (?) material, and quartz. The bedrock, which is very soft and poorly exposed, appears to be decomposed argillite. An area of badly decomposed feldspar porphyry (?) was seen in the cut, but it was not sufficiently exposed for its relationship to the bedrock to be determined. Small quartz veins are said to occur in the district, but little development work has been done.

Recommendations on Future Study

Little is known of the geology and mineralization of that portion of the country between the upper Stuyahok River and Marshall, which lies away from the Yukon River. The geologic maps cover only the strip of land adjacent to the river.

It is felt that this region is one of the more promising from the standpoint of the placer prospector, and that additional information concerning its geology and mineralization should be obtained. The structural and areal geology appear to be relatively simple, although exposures are generally poor away from the river. A group of hills at the head of the Stuyahok River, and which also can be seen from near Marshall, should afford good exposures. A few patches of granitic rocks are shown on the map, and doubtless more are to be found. A more thorough study of the placer deposits that are now being mined may afford information concerning the source and deposition of the gold. A study of the heavy minerals associated with the placer gold also may be of value in this respect.

A one or two man outfit with camping and other equipment and an outboard powered boat should be suitable for an investigation of the country. Airplanes could be used to some extent in covering the area away from the Yukon River.

Transportation and Communication

The Lower Yukon down to Marshall is served by the Alaska Railroad river steamers, which haul freight from the railroad at Nenana. The freight rate is the same over the whole river, regardless of the distance from Nenana. Practically all of the mining and other supplies are brought in by steamer.

Airplanes are much relied on for traveling and for emergencies. During the period when the steamers are not in commission, airplanes offer the only practical means of transportation over long distances. Airplane service is less certain in the lower Yukon country than further inland, because of higher winds and generally more stormy weather. The planes make no scheduled flights. Like tramp steamers, they travel wherever business is to be had, returning to their base only when carrying freight or passengers, or for periodic overhauls. Most of the planes base at Anchorage. The Star Airlines does most of the business in this region.

Good landing fields are located at Flat Creek, Holy Cross, and Wilson Creek. During low water a bar on the Yukon two miles above Marshall is used occasionally. The Yukon and other navigable rivers and sloughs are suitable for use by pontoon planes in summer, and by planes mounted on skis in winter.

The only auto road in the region is the one to Willow Creek. The camps at Flat and Wilson Creeks are served by partly graded cat roads, for which part of the money was appropriated by the Road Commission. As stated previously, there is no regular trail to the camp on Bobtail Creek in the Kako region. A road, if built, should follow the higher ground back from the creek, and would be at least 10 miles long.

To build roads in this region that are suitable for freighting by truck would require the laying of heavy corduroy over most of the way. It is doubtful if the expense would be justified unless mining activity increased considerably, as timber is not plentiful in much of the region. The operators should be able to ship in their heavy supplies in the spring, or in the early summer before the ground thaws. This would require a certain measure of forethought, and in some cases, additional credit or cash, as the supplies would have to be landed by steamer late in the preceding summer. In this manner much expensive road building and maintenance could be avoided, and the supplies ordinarily could be brought in more cheaply.

The importance of radio communication in this region is indicated by the fact that nearly every mining camp has a radio receiver and transmitter. Private stations also are maintained at Holy Cross and Marshall, and most of the planes are equipped with two way radio. Few of the stations use code. Because the region is isolated, and the distance between mining operations is great, radio phones are used for calling airplanes, sending and receiving weather reports and for transacting general business. A telephone line, installed several years ago, connects the Willow Creek camp with Marshall.

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