



2431

U. S. COAST AND GEODETIC SURVEY.

Henry S. Pritchett, Superintendent

State: *Alaska*

U. S. O.

LIBRARY

JUN

Acc. No.

51656

DESCRIPTIVE REPORT.

Tape & Hyde Sheet No. *2431*
2439

LOCALITY:

Scammon Bay

1899.

CHIEF OF PARTY:

G. R. Putnam

2431

JUN - 1 1900.

65300

51656

Scammon Bay, Alaska

Descriptive report to accompany sheets { Topographic No. 2431.
Hydrographic No. 2439

General description. Scammon Bay is the body of water lying east and north of Cape Romanzof, and between the Sand Islands and the mouth of Khun River. Very little was known of it previous to this season, there never having been any systematic exploration of it. The following general description of this region was prepared from the results of the work of 1899, for "Alaska Coast Pilot Notes" Bulletin No. 40 (2nd edition), p. 36;

Cape Romanzof* is a bold and prominent headland with cliffs rising abruptly from the water over 1,200 feet along its western face; at the sharp extremity of the cape there are remarkable perpendicular shafts of rock on the side of the cliff. The cape is the western termination of the Askinuk Mountains, the highest of which (2,363 feet) is about 5 miles from the cape and can be seen a considerable distance at sea.

Northeastward of the cape, $4\frac{1}{2}$ miles, is the southern end of the Sand Islands. These two islands extend in a general north and south direction about 13 miles, including the interval between them, and at a distance from the coast diminishing from 7 to 5 miles. The north island is mostly covered at high tide.

The coast trends in an easterly direction from Cape Romanzof 15 miles to the mouth of Khun River, and throughout most of this distance is bordered by abrupt cliffs and hills, gradually diminishing in elevation.

Scammon Bay lies between this shore and South Sand Island. In general it is very shoal with numerous bars showing bare at low tide. There are two small coves along its south side, respectively 1 and 9 miles from Cape Romanzof, but both are quite shoal. There is a limited area of water with depth of 5 fathoms just south and east of the southern end of Sand Island, and there is a channel of the same depth leading into this and passing about $2\frac{1}{2}$ miles north of Cape Romanzof. A narrow channel with a minimum depth of about 2 fathoms continues through Scammon Bay and into the Khun River. There is about 4 fathoms off Cape Romanzof but the water shoals quickly to the northeastward, so there is little protection except for very light-draft boats. There is a large shoal area with breakers about halfway between the cape and the Sand Island, and another shoal with less than 2 fathoms lies **NNW.** (true) from the cape distant $2\frac{1}{2}$ miles. Along the high land forming the south shore of Scammon Bay the water is 1 fathom or less in depth throughout its length, excepting just inside of Cape Romanzof.

* On some recent charts Cape or Point Dyer, an unimportant bluff on the south shore of Scammon Bay, has been confused with Cape Romanzof.

North from the mouth of the Khun River the coast is low and marshy to the Yukon River mouths. It is reported to be extremely shoal between the northern Sand Island and this shore.

The bay lying south of Cape Romanzof has not been explored, but a number of bars, bare at low tide, were seen extending across its entrance between the cape and the north end of an island; near the latter there appeared to be a channel. The coast between Cape Romanzof and Nelson Island is low, and it is reported that the adjacent waters are shoal.

The **Yukon Flats** extend from Scammon Bay to Stuart Island and should not be approached by deep-draft vessels nearer than in about 8 fathoms of water. (See page 40.)

* this was not seen bare at any tide.

This sheet includes the shore line about two miles south from Cape Romanzof, and about 15 miles E. to the mouth of Khum River, and about 14 miles N.W. and N. from the mouth up the coast.

The photographs (on file in Archives, see letter and list transmitted May 16, 1900) give a good idea of the topography of this region. The cliffs on the west face of the Cape rise abruptly from the water to a height of 1262 feet, the elevation gradually diminishing to the southward as far as seen, about 6 miles.

The hills and lower mountains of this region are mostly comparatively smooth and rounding, but the higher mountains are jagged. Considerable snow was seen on the summits and in shaded places even at the water line in the latter part of July. There is a sort of divide extending back of Edmonds Cove; west of this is the higher group of the Askinuk Mts., while to the eastward the hills are flat topped and lower.

Small fresh water streams are found at short intervals along the south shore of Scammon Bay, but the water is so shoal that it is generally difficult to reach their mouths even with a whale boat. The Khum River is a tidal stream evidently connecting with tidal lakes in the delta marshy country. The current varies with the tide, running out and in with about equal velocity (measured from 1.1 to 2.0 knots per hour). The water in the river, ^{near the mouth} is nearly always brackish and is not used by the Eskimos for drinking. The Khum River is about 260 metres wide at its mouth.

The mud flats north of the Khum are bare for 2400 metres from the shore at low tide. At low tide many shoals show bare in Scammon Bay, 9 of which were located. Some others were seen at extreme low tide, near the mouth of the river and up the coast. Lines of breakers were seen apparently extending most of the distance between the Sand Islands, though there may possibly be a narrow channel between them. The South Sand Island is about 4 miles long

and about half covers at high tide (see top, sheet no. 2432 for North Sand Island, which is mostly covered at high tide). Capt. Peterson of St. Michael and others have reported that it is very shoal between the North Sand Island and the coast.

Little drift wood was seen on the shores of Seammun Bay; all that is of value is used by the Eskimos.

The only inhabitants of the Bay in 1899 were one ^{Eskimo} family living in a hut at Windy Cove. There was one unoccupied hut in Edmonds Cove. There is a considerable Eskimo village, Kutwint, on the South side of Khun River about four miles from the mouth. Dr. Edmonds found two huts, ^(unoccupied) about ten miles up the coast from the Khun. It is seen that this region is very sparsely settled compared with the Yukon mouth and the country to the southward.

From the hills back of Point Dyer a good view was obtained of the country to the northeast and up the coast. Some of the hills beyond the Yukon River were plainly seen. Except for the Kucilvak Butte and the scattered hills each side of it, the entire region appeared to be a delta country, marshy, with numerous lakes, ponds and streams.

Tidal observations were made at three points, as follows:

Khun River mouth	latitude $61^{\circ} 50' 45''$ N.	longitude $165^{\circ} 33' 49''$ W.
Point Smith	" $61^{\circ} 49' 30''$	" $165^{\circ} 54' 26''$
Windy Cove	" $61^{\circ} 48' 37''$	" $166^{\circ} 03' 02''$

The exigencies of the work prevented a direct connection between these stations. A tide gauge was running at the Kwiklowak mouth of the Yukon during this interval, however.

Numerous photographs (some with photo-topographic camera) were taken throughout this region; prints and negatives are on file in the Archives (see list transmitted May 16, 1900).

So far as known Seammun Bay has never been used by vessels except by a few of the light draft river craft that followed up the coast in 1898, bound to the Yukon River. Under the present circumstances there appears to be no likelihood of the use of Seammun Bay, both on account of its dangerous shoals, and because the approaches to the Yukon from this direction are less

favorable than those from St. Michael.

The weather conditions in the Bay appeared to be somewhat worse than those up the coast, influenced possibly by the Akinuk Mts. Severe easterly and southeasterly gales were experienced in July 1899. One of our boats lying on the beach at Windy Cove was picked up by the wind and rolled onto the rocks and stove in.

Outline of methods of survey employed.

Very little was known about this Bay, so that it was difficult in advance to plan the work here. Although the instructions called only for a reconnaissance, yet of course it was desired to make such an examination as to answer present needs. The bay was found so full of shoals however, that great difficulty was found in navigating its waters even with the "Yukon" drawing but $4\frac{1}{2}$ feet. More complete work was prevented also by the limited supply of fuel. Contrary to expectations very little drift wood was found in the bay, so that it was necessary to leave when the limited supply of coal which the "Yukon" could carry, was nearly exhausted; we reached St. Michael with only one half ton of coal remaining on board. But the greatest obstacle was the weather. During the 14 days spent in Seamon Bay two southeasterly and easterly gales were experienced, with rain and mist.

As the work in Seamon Bay was detached from that in the Yukon Delta, it was necessary to make astronomical observations for longitude, latitude and azimuth. Ten chronometers and a meridian telescope were carried, but although the latter was set up at three of the temporary headquarters along the Bay, the unfavorable weather prevented any star observations being obtained. As the only remaining resource therefore, sun observations (mostly with 7 in. theodolite) were made at six different points, and the deduced positions and azimuths were adjusted with the triangulation as explained in the computation. The longitude was carried from St. Michael, where true observations were made before and after the voyage. From several triangulation stations along the coast near the Yukon mouth, but, Seward, the highest of the Askinuk Buts., was observed. The Kusilvak Buts. were well tied in from the Yukon delta and river triangulation, and they were also observed from one of the triangulation stations at Seamon Bay. When these features were plotted on topographic sheet No. 2432, it was indicated that the positions in Seamon Bay might be 120 metres too far east, and 600 metres too far south, as compared with the St. Michael data.

used in the delta. The correction was not considered definite enough however, to make it seem expedient to shift this work at present, particularly as these positions are tentative, and it will very likely some day be found desirable to carry a triangulation from the Yukon mouth to the Kuckokwin.

A base 1560 metres in length, was measured on the flats south of the Khun River near its mouth, and from here a rough triangulation was carried along the south shore of Seamon Bay to Cape Romanoff, using iron pipe water signals placed on shoal spots in the Bay as concluded stations. This triangulation was carried along with the other work, and not in advance of it. A traverse line was also run with 7 in. theodolite along the south shore of the Bay from Khun River to Cape Romanoff and about 2 miles south of the Cape; also for about 14 miles from the Khun River up the coast towards the Yukon mouth. These traverse lines were adjusted to fit the triangulation and tangents to the coast obtained from triangulation stations. It was planned to carry the traverse line up the coast to join the previous year's work south of Kripuyuk River, but this connection was not completed owing to the loss of a boat and provisions by the traverse party. This gap of 14 miles is the only uncompleted interval in the shore line from Cape Romanoff to St. Michael. It is not of great consequence however, as this is a low, marshy and very even coast.

The topography of the coast was obtained in running the traverse, by the transit and stadia method. Horizontal and vertical angles were measured to all prominent elevations, and the relief is shown on topographical sheet No. 2431, by means of 100 ft. contours, and the elevations of summits. Many shoals in the Bay were located from elevated stations whose heights above sea level had been carefully determined. Distances were computed (and plotted), from the measured angle of depression, using the height as a base; this principle was found quite useful on several occasions in obtaining otherwise inaccessible information. From the high cliffs on the west side of

Cape Romangoff a good view was obtained over the low coast to the southward, and from angles taken from traverse stations a reconnaissance sketch was made of a considerable unexplored stretch; this brought out large discrepancies in the compiled coast line, and an evident confusion in regard to Cape Romangoff and the other capes in this vicinity (see letter to Superintendent

Feb. 21, 1900). (see topographic sheet 2432 for continuation of coast to southward).

The hydrography especially was seriously hampered by the bad weather and lack of fuel as mentioned. The examination was sufficient however to prove that the greater part of Seammon Bay is too shoal to be of any practical use to navigation. Deep water was found immediately south and east of the south end of South Sand Island, but the limited area of this, the shoals on each side of the channel leading to it, and the distance from the high land, render it of probably little value to navigation. There is a narrow channel of two fathoms continuing through the Bay and into Khun River. Hydrographic work off the entrance to Seammon Bay was done by the U. S. S. "Patterson" (Asst. J. H. Pratt) during the season of 1899. (Portions of the lines on C and H days are plotted entirely by compass courses, and are somewhat uncertain. Dist out off the signals.)

Magnetic observations were made at Khun River mouth.

Dr. Edmonds in his report makes the following notes on that portion of the traverse line run by him north from the Khun River mouth: Between the Khun River and the Kupriuk there is little difficulty in running a traverse line. The grass line and bank can be easily followed and there are but three or four streams that must be forded. Canoes however cannot come close in shore except at high tide and even the streams cannot be entered except at that time. When landing at any other time one has to plough through deep mud for a quarter mile or more. On this stretch it was found unnecessary to have the canoe accompany the work.

G. R. Putnam
Assistant

May 24, 1900.