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Department of Commerce and Labor
COAST AND GEODETIC SURVEY

O. H. Tittmann
Superintendent.

State: *Alaska*

DESCRIPTIVE REPORT.

Top *Top*^c Sheet No. *2976*

LOCALITY:

Cordova Bay, I. L.
Bay to Kassa Inlet.

1909

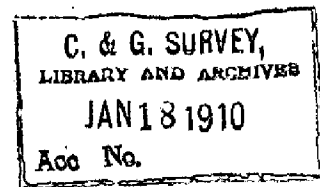
CHIEF OF PARTY:

R. B. Derickson

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COAST AND
GEODETIC SURVEY
JAN 18 1910
REFERRED TO



DESCRIPTIVE REPORT

to accompany

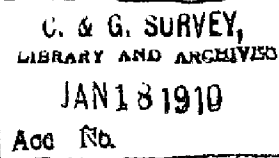
Plane Table Sheet of Cordova Bay, Alaska

from

Eureka Pass to Kassa Inlet.

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Descriptive Report to accompany Plane Table Sheet of
Cordova Bay and Hunter Bay, South-East Alaska.



The accompanying sheet is a topographic survey of the shore line and outlying islands of the arm of Cordova Bay north of the Barrier Islands. The sheet starts at Eureka Pass and takes in Tah Bay, Hunter Bay, the entrance of Klakas Inlet, and the shoreline past the Ship Islands to the entrance to Kassa Inlet.

The triangulation of the season of 1908 was extended up the Bay on completed ^{tri}quad~~yl~~aterals, using a 7" repeating theodolite and taking six readings direct and six reverse. Numerous hydrographic signals were cut in with the triangulation, computed and plotted; still other signals were put up and cut in by plane table triangulation from the stations located by triangulation.

The sheet was constructed on a polyconic projection of 1:20000 and signals of both the main scheme and secondary stations, plotted and checked before going into the field. The telemeter rod was used for plotting positions of extra signals put up to facilitate the work and for determining distances to points on shore line from set up stations.

Angles of elevation were taken from different stations to the tops of trees, and elevation of hills and ridges computed from table in Plane Table Manual. 100 foot contours were put in with every 500 foot, heavy.

The head of Tah Bay was done by sextant topography and

transferred to the sheet. The large fresh water lake was partially sketched in, a traverse being run part way down and the remainder sketched, in the field, on the sheet.

The stations in the main scheme was not over 10000 meters apart and averaged about 4000 to 7000 meters. Intermediate stations used for hydrographic signals and plotted on the sheet were from 600 to 800 meters apart in places.

Appearance of Coast. On entering this arm of Cordova Bay the Ship Islands will be easily distinguished to the northward. They are several outlying islands about 600 meters off shore. Northeast of these islands on the peninsula that divides Klakas from Kassa Inlet are several high peaks; one conical peak about 1500 feet, can be easily recognized as the trees are very thin on top and on the north side for 200 feet there are none at all. The shore is very irregular, large reefs making out from most of the points with numerous outlying rocks.

Bird Rocks will be easily distinguished as they are the only outlying rocks in this vicinity, on the northern shore. The rocks consist of a broken ledge with one large rock showing about 30 feet above high water and about 30 to 40 meters across, with a small one to the northward about 10 to 20 feet above high water. Large kelp patches extend to east and south of these rocks. 200 meters southeast of larger rock is a rock covered at ordinary waters.

To the eastward of these rocks about 3800 meters Turn Island furnishes a very good landmark. The island is the southernmost of a number of small islands, and is bare with the

exception of a line of trees running east and west which show up as a tower from a distance. The island is about 110 meters in length north and south and about 60 meters east and west.

Numerous small islands with steep rocky shores lie to the north of Turn Island in the entrance to Klakas Inlet, and also the Indian village Klinkwan.

Turn Point. A long ridge of hills about 900 feet high running east and west and terminating at Turn Point, divides the upper end of this arm of the bay into two bays, Hunter Bay being to the northward and Tah Bay to the southward.

Guide Rocks show at low water 300 meters west to the southern of the two small islands in Tah Bay. These rocks show thru the Eureka Narrows, and a vessel coming thru the Narrows, north bound, should head for these until well past the port point before turning for Shipwreck Point, as a rock lies 160 meters off this point. The coast line is rather abrupt all along this bay, there being very little beach at low water, the ground^d rises rapidly in most cases. There are numerous small peaks of the foot hills of the range farther eastward, of about 200 to 600 feet elevation, at the head of both Tah and Hunter Bays. On the north side of the bay the ground rises to the summit of the range varying from 1000 to 2500 feet and are covered with trees and brush. A conical bald peak about 2400 feet high, just back of Klinkwan and very green in the summer, is known as the "Green Monster"; it is easily distinguished for some distance. Several peaks 1500 to 1600 feet high show in the range that divides Klakas from Kassa,

and terminating at Shipwreck Point.

The houses in Klinkwan break out when abeam of Turn Island. The Church is a good landmark, as it can be seen well down the bay. It is a white structure with two spires. To the eastward lies a high range ~~a high range~~ of mountains, but not shown on the sheet; they range from 2000 to 4000 feet high, and form part of the ridge between Moira Sound and Cordova Bay.

Wallace Rocks lie in the entrance to this ^{part of Cordova Bay} bay, on a line between Barrier A and Bird Rocks, 400 meters north of the intersection of this line and one between Turn Island and Boat Rocks. They are almost due south 3300 meters of Bird Rocks. These rocks are just bare at spring tides but ordinary they are covered; flat rock kelp covers them and a small patch of the long kelp can be seen in the summer at low water, but not until practically on the rocks. These rocks are shelving, presenting a flat surface about 30 meters at low water, dropping off rapidly to deep water on all sides. Another rock lies 800 meters east and south of Wallace Rocks.

The weather in this locality cannot be depended upon. During the summer months of June, July, and August, the weather is supposed to be fairly dry; but there is always considerable rain, and ^{it rains} some seasons continually, there not being any dry weather the entire season while the work was in progress. The majority of the blows come from the southeast with ^{only} an occasional ^{short} S.W. or N.W. breeze. Southeast winds invariably bring bad weather. Northerly or northwesterly wind usually brings fair weather.

Description of shoreline from Δ Titan, Eureka Pass to Ship Islands. The topography starts with Δ Titan at the northwest entrance to Eureka Narrows and follows the high water shoreline to the entrance to Klakas, here it is discontinued to the point across the inlet; only about a mile of the inlet being put in. From this point it follows the shoreline till past the Ship Islands and stops at the entrance to Kassa Inlet, the limit of the sheet. All outlying islands on the northeast shores of Cordova Bay are on this sheet.

Starting at the Narrows the coast line is rather abrupt, there being practically no beach at low water; the trees and bushes are awash at extreme high tide and overhang the ledges. The ground rises rapidly to an elevation of from 200 to 600 feet; these being the foot hills of a higher range to the eastward. The shoreline at the head of Tah Bay and Hunter Bay is not so abrupt and at low water there is considerable beach in places. A ridge of hills that has the appearance of an island separates this arm of the bay ^(Tah Bay) from Hunter Bay; the hills are 900 feet in height and there is a prominent horn of about 750 feet near the eastern end. The hill drops off rapidly in all directions except on the west end, ^{which is} a "Turn Point," where a flat extends for about 2000 meters and with an elevation of 125 to 150 feet. The hills are heavily wooded from water line to summit. Around this point to the eastward is Hunter's Bay, with numerous openings running back between broken islands. About three quarters of a mile northeast and along the shoreline from Δ Titan, a salt lagoon makes in and runs to the southward for

a mile; there is no passage except at extreme high tide and then only for small boats. At low water, water is confined in four salt lagoons, or ponds, with flat shingle beach between them. ^{See report by Topo. Staff Pt. Marsh Ids}

About a quarter of a mile further north, a small bay makes in running in a southeasterly direction for three quarters of a mile and averaging 250 meters across. The beach is rocky in most places and fairly steep, with little patches of shingle. A small island with a rock east of it and between it and the shore, is at the head of the bay. Good anchorage for small crafts can be had here in from 5 to 20 fathoms water. About ^{the entrance of small} 400 meters west of this bay is a small wooded island with steep rocky shores, and 300 meters west of it is a ledge of rocks known as "Guide Rocks". The passage between this island and the shore is filled with kelp, with rocks close in to the beach. The island side is fairly clear, a short ledge making out on the southeast end of the island. Just north of this bay is Anchor Island, 300 meters off shore. The island is wooded, with rocky shores which drop off rapidly except on the south and east sides where they extend for a short distance. 600 meters northeast of this island is a broken ledge of rocks on which ^{this} "Little" is located. These rocks show at ordinary tides but are covered at extreme high water. The ledge runs in a northwest and southeast direction for about 200 meters and is about 60 to 70 meters across. Large kelp patches extend northwest of ^{this} ledge for 200 to 300 meters showing probably further extent of rocks.

From the ^{small} bay described above, the shore line turns to the

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At the junction of the tree arms at the head of
Tah Bay the shoreline was done mostly by sextant topography
aided by plane table cuts. Flags were placed at various
intervals along the shoreline and cut in by the sextant.

See the report in Par.2 on Page 11 for the check
used on this work.

RSD

east and is rocky and very abrupt, dropping off into deep water; until it reaches a point due south of © Little; here a bight makes in for 200 meters with considerable beach of shale and shells at the head with a large stream emptying there., Past this bight the shore runs in a northeasterly direction and is rocky and irregular with a fairly steep shore. At a point south of the large island, ^{about one mile NE of T.S. bight} the water is foul on the north shore of the passage but seven fathoms can be carried thru close in on the southern shore; large kelp beds are off this point of the island and a spit of broken rock and boulders make out from the island at this point. ^{*} From this point there are three arms of the bay, the northern arm terminating about 1400 meters south of a point on the shore opposite the Hunter Bay Cannery. The ground on the east shore of this arm and the south arm is flat for quite a distance, then rises to an elevation of 600 to 800 feet. The shore is rocky rising 4 to 6 feet above high water to the tree line. On the west shore of the south arm the ground rises rapidly to 300 -400 feet elevation. Considerable flats make out at the heads of all these arms, with numerous streams emptying in them. Several small islands lie in the arms; at one place in a narrow part of the north arm, they form rapids at half tide with a 4 to 6 knot current.

This large island, mentioned above, and two smaller ones lie about 400-600 meters south of promontory which divides Hunter Bay and Tah Bay, and form a passage of that average width for two miles. There is a ledge of rocks in the center of the passage about 1000 meters north by west of the east end of the island. Two sunken rocks showing at extreme low tides

lie about 600 to 800 meters a little to the southeast of this ledge. Both shores are rocky, rising 4 to 6 feet above high water and then sloping away to the hills. The north shore rises very rapidly along length of ridge.

Due south of the northwest end of these islands is a large ledge of broken rock on which A Rhea is located. Two rounded boulder-like peaks, about 6 to 8 feet above high water, show at all times; but the general level of the ledge is covered at high water; and is about 100 meters by 20 meters running in a north by west and south by east direction. They are entirely bare and composed of black horn-blende and igneous rocks. The shoreline on the south side of this (Hunter) ridge, from this point to Turn Point, is chopped by several bights and two prominent ledges; the southeast one composed of broken rocks and extending at low water 120 meters off shore. The beach along here is composed of broken stone and small boulders.

Turn Point is low and is composed of a number of small grassy rocks all connected at low water. It is the western part of the peninsula between Hunter and Tah Bay and not wooded at the point, the tree line being some 300 meters east of the point.

The north shore of Hunter Bay for a distance of 1800 meters from the island north west of Turn Point is composed of broken islands and rocks with considerable openings of water between them and the main shore line proper. The beaches are rocky with an occasional short strip of shingle. Just north-east of Turn Point a large bay makes in behind these islands.

It is about one mile north and south and 800 to 1000 meters east and west. Several islands and broken rocks lie in the center of the bay. The beaches are rather flat in places; the west arm having long stretches of shingle. The entrance is north west of the large island at the mouth of the bay, and is foul and full of kelp. The bay was not sounded out; but inside it looks clear.

About 2200 meters from Turn Point a large arm makes off to the northward with very steep shoreline on the east shore. This arm runs in for 1600 meters where it narrows with an island in the center of the channel; past this point it widens out again and continues northward for 2000 meters, turning to the westward where it seems to terminate; but at extreme high water a small boat can be taken thru an extremely rocky and crooked passage into a large fresh water lake which lies in between two ranges of lines. This lake has a general direction of west by north and east by south, and is about a mile long with a mean width of 400 meters. The water is very shallow here and bottom rather flat, with flat beach of broken stone and shale covered with grass. Several small islands are in this lake, and it is supplied by large streams draining the ranges on either sides. The water in the inner salt lagoon is rather shallow in shore and long flat beaches are presented at low water. The beaches are of broken rock, pebbles and stones, rising gradually to the hills behind, and are covered with grass, especially on the western shore. At half tide there is a ^{strong} ~~large~~ current at the narrow eastern channel into this lagoon; the western one being filled with broken rock,

which makes it a rapids. A small boat can be taken thru the eastern channel with the tide, but there are considerable swirls and the tide runs so strong that it is dangerous on account of the narrowness and the double turn in the channel. ^{estimated} 6 to 8 knot current runs with the tide.

From this opening to the head of Hunter Bay is about one and half miles, with the N.W. Fisheries Cannery and Indian village on the north shore, two miles from Turn Point. The cannery consists of a long gable building about 80 x 20 meters west of the wharf and another clump of smaller buildings east of the wharf some 60 x 35 meters; The long dimension being east and west. At the east end of the large building or cannery proper, is the power house. The stack marked on chart as hydrographic signal, is the taller of the two. The Indian houses are one story structures as a whole, made of rough sawed lumber and unpainted in most cases. A few are painted red as are the cannery buildings. The south shoreline is unbroken by any large openings. 1600 meters from Turn Point a grassy rock showing at all times, is in the center of channel leaving a passage of 50 meters southward and 150 meters on north side. A rock showing at low water is close inshore; 40 meters off-shore and 130 meters north by west of this inlet. The head of this bay is about three quarters of a mile east of the cannery. Large streams empty in here, with considerable beach in places on the east and south shores. A small wooded inlet lies directly opposite the cannery wharf; it is connected at spring tide to the shore by mud flats and broken shale and rock.

A small stream empties here on a good beach for small boats.

In order that a check might be had on the Topographic work, a traverse line measured by a 50 meter tape and compass, was run from the south side of Hunter Bay, opposite the cannery, across the neck of land separating Hunter Bay and the north-west arm of Tah Bay. The distance 1362 meters agreed within 3 meters of the distance measured on the topographic sheet; showing that perfect control of the work had been exercised.

Directly north of Turn Point, and one mile distant, is the village of Klinkwan. This lies behind a number of small islands forming somewhat of a harbor, but several rocks covered at high water are in the entrance, making it dangerous for anyone not acquainted. There is a good shingle beach all along the village, otherwise the shore is very rocky along here. The village is composed of some 40 houses arranged along two streets intersecting at right angles. The houses are substantial structures of sawed lumber and shingled in most cases. The majority are two stories in height with glass windows, and a large number are painted a grey, white, or yellow. The Church is a white frame structure on an elevation above the town. It is about 20 x 30 meters with two tower like spires, making it easily distinguished some distance down the bay. Several totem poles and two tall flag poles are in the village. The islands lying at the entrance to Klinkwan are used as burial grounds by the Indians, also the points of land just east and west of the village. Here are small frame structures ^(Sarcophagi) which resemble large flat beehives.

From here on to Klakas^{Inlet}, the shore is steep and rocky with occasional patches of shingle and sandy beach. The passage North of the large island shown, is foul, a rocky ledge extending across it, showing at low water. The main entrance to Klakas lies north and east of Turn Island, but a very narrow passage^{locally}, called "Hell Gate" makes in between a large island and the main shore about three miles to the northwest of Turn Island. A rock is reported as lying midway between Hell Gate and Bird Rocks.

Several large bights make in between here and Shipwreck Point, but are not sheltered for an anchorage. The coastline along this part of the bay is very broken with numerous ledges and rocks. Numerous rocks lie between Turn Island, Bird Rocks and Shipwreck Point, but there is a good launch passage to the north of all these small islands. A very large rock covered with grass, lies about 350 meters south of the shoreline at Shipwreck Point. Northwest of this rock is one large island and two smaller ones forming an inside passage up to Kassa Inlet. A rock covered at ordinary low water is in the center of this passage.

The Ship Islands consists of two large islands about 1000 meters apart and two smaller islands at the southern end of the south island, of these two, with numerous out-lying broken rocks and ledges. The shore is very steep and rocky with very little beach except around these broken ledges of rock. These islands and main land islands are heavily covered with timber.

Past these islands the shore line turns to the northeast and runs up to Kassa Inlet. This is contained in report on

sheet No.2.

The Indian village of Klinkwan offers an anchorage for small vessels. They have no dock or watering facilities, but they have a log buoy with 5 fathoms of water at low tide. A fairly even beach is exposed at low water and can be used for beaching a vessel for slight repairs.

The town consists of a Church, School-house, Store and some 40 to 50 houses. The Church is on a slight elevation back of the town and can be seen for some distance to the southward; it is a frame structure with two spires, painted white.

The Hunter Bay Cannery have a dock with 18 feet at low water. Besides the cannery buildings there is an Indian settlement there of some 30 houses, which is inhabited in the summer by the fishermen's families. Water is piped down to the dock; and any slight machine repairs can be done at the cannery. Coal can be had there in limited quantities, the supply being only sufficient for there own needs.

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ANCHORAGES. { See reports accompanying Hydro. Sheet
for detailed description

In ordinary weather, good anchorage can be found on the flats southeast of Turn Island, in 10 to 20 fathoms of water, but for small vessels it would prove too rough in a blow as there is no protection.

Anchorage can be had in Hunter Bay, 10 to 15 fathoms and in Tah Bay behind the northward of the two most eastern islands, in 10 to 30 fathoms water.

There is anchorage for small boats in Klinkwan Harbor, but the space is very limited.

Anchorage can be had in a number of small bights but poor protection in blows.

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The following is a list of the plane table positions used by the hydrographic party. None of these stations can be recovered as they are only temporarily marked by small flags or signals:

| Station | Latitude | Dist.in Meters | Longitude | Dist.in Meters. |
|---------|---------------------|----------------|----------------------|-----------------|
| Can ☉ | 54 ⁰ 49' | 345 | 132 ⁰ 22' | 193 |
| Rug ☉ | 54 49 | 572 | 132 20 | 437 |
| Sin ☉ | 54 49 | 1502 | 132 19 | 796 |
| T.G. | 54 49 | 1136 | 132 20 | 62 |
| Tip ☉ | 54 50 | 122 | 132 19 | 266 |
| Toe ☉ | 54 50 | 515 | 132 18 | 963 |
| Not ☉ | 54 50 | 398 | 132 19 | 594 |
| But ☉ | 54 50 | 690 | 132 18 | 500 |
| Reef ☉ | 54 50 | 1540 | 132 18 | 1035 |
| Man ☉ | 54 51 | 330 | 132 19 | 460 |
| Tar ☉ | 54 51 | 102 | 132 20 | 69 |
| Mit ☉ | 54 51 | 849 | 132 20 | --- |
| Kin ☉ | 54 51 | 1375 | 132 21 | 201 |
| Pup ☉ | 54 52 | 1560 | 132 22 | 152 |
| Stick ☉ | 54 52 | 1109 | 132 21 | 923 |
| Mud ☉ | 54 52 | 1068 | 132 21 | 662 |
| Squaw ☉ | 54 52 | 1220 | 132 21 | 289 |
| Rat ☉ | 54 52 | 831 | 132 20 | 695 |
| Pag ☉ | 54 52 | 556 | 132 20 | 616 |
| Him ☉ | 54 52 | 666 | 132 21 | 244 |
| Lot ☉ | 54 52 | 660 | 132 20 | 371 |
| Doe ☉ | 54 52 | 325 | 132 20 | 202 |

Plane Table Positions, Continued

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| Station | Latitude | Dis.in Meters | Longitude | Dis.in Meters |
|--------------------|----------|---------------|-----------|---------------|
| Buck ^o | 54° 52' | 526 | 132° 19' | 1062 |
| Vat ^o | 54 52 | 111 | 132 19 | 534 |
| Cow ^o | 54 52 | 504 | 132 19 | 483 |
| Stack ^o | 54 52 | 625 | 132 18 | 1020 |
| Bay ^o | 54 52 | 523 | 132 18 | 600 |
| Pine ^o | 54 52 | 140 | 132 18 | 853 |
| Sock ^o | 54 52 | 289 | 132 18 | 327 |
| Sal ^o | 54 52 | 412 | 132 18 | 301 |
| Tag ^o | 54 52 | 829 | 132 19 | 713 |
| Rig ^o | 54 52 | 1083 | 132 19 | 1021 |
| Pit ^o | 54 52 | 1217 | 132 19 | 655 |
| Pug ^o | 54 52 | 1666 | 132 19 | 634 |
| Pat ^o | 54 52 | 1492 | 132 19 | 836 |
| Deck ^o | 54 53 | 897 | 132 29 | 770 |
| Tango ^o | 54 49 | 352 | 132 20 | 143 |

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STATISTICS.

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|--|-------------|
| High water shoreline | 91.2 miles. |
| Square miles of topography | 28 |
| Number of triangulation stations | 17 |
| Number of Computed hydro- graphic signals | 6 |
| Number Plane Table Positions | 36 |

Respectfully submitted,

SKinner

Aid, C. & G. Survey,

Topographer.

Comdr. R. B. Benson
Approved,

R. B. Benson

Asst., Comdg. Chief of Party.