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Diagram Nos. 812A-1 & 815A-1

Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*
3042

Field No. _____ Office No. *3042A*
3043

LOCALITY

State *S. E. Alaska*

General locality *South Entrance*

Locality *of Cordova Bay*

1909

CHIEF OF PARTY
R. B. Henckson

LIBRARY & ARCHIVES

DATE _____

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C. & G. SURVEY,
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Descriptive Report & Table of Statistics
accompanying

Hydrographic Sheets showing development of waters
at

the south entrance of Cordova Bay,

S.E. Alaska.

By party on U.S.C. & G.S.S. "Gedney"

R.B. Derickson,

Asst., Comdg.

1909.

Original.

3042 3042a 3043

44-4
3(4) x 12
20-25
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20-25

Hyd. E 3042, 3042a, + 3043

Report of Hydrographic Survey accompanying

Sheets:

- A. Dixon Entrance
- B. Cordova Bay
- C. Entrance to Cordova Bay.

SURVEY METHODS

The general character of the work was deep-sea sounding, an average of 50 fathoms, except in places such as the entrance of Cordova Bay, where a bottom of 200 fathoms was the average, and the several shoals of about 14 fathoms found in the eastern arm of Cordova Bay.

All deep sounding, that is over 20 fathoms, were made with sounding machine. A "Cosmos" sounding machine was used on Str. "Cosmos" which gave the readings on a dial attached to the reel holding the wire; giving a zero reading when the lead was at the surface of the water. Soundings were taken when boat was dead in the water and on range selected at beginning of line by the Officer in charge. The mountainous country afforded good ranges, and the lines of sounding were generally run in this manner; moreover owing to roughness of sea and peculiar currents, it was impracticable to use compass at most times to run the desired lines.

The time length of running between soundings was sometimes noted in records, in the remark column, particularly when soundings were taken between two consecutive positions. Where the

Limits of surveys and scales are given on title pages attached to respective smooth sheets.

time lengths of running is not noted in such cases, they were equal, and soundings therefore plotted at equal intervals between the positions on the smooth sheets. The time in "time column" of records, denotes the time of ordering the boat to stop for sounding; 135⁰ meridian time was used. Engines were immediately reversed and lead let go. At the beginning of the proposed line, its range was determined after position and sounding were taken and the boat still dead in the water; this accounts for some of the time lost between the first and second positions as noted in records.

Numerous rocks, kelp patches and shoals were developed by hand lead, using "Cosmos" by either drifting or going at very slow speed in order to get the least depth and vertical casts of lead. Launch No.27 and whaleboat were also used in like manner. Eureka Pass was fully developed by whaleboat (ranges to run lines being used in this case also) besides at places, "Cosmos" lines and launch drift lines were run. Generally when drifting, only time of position was noted, with soundings taken one after another while developing shoal water.

The survey was controlled by a tertiary triangulation scheme, executed during the same season between the stations Nichols, Barrier, Marble and others. Intermediate points were determined by plane-table and two or three by sextant. Any rock under a signal was well covered with white-wash, and there was little trouble seeing them.

On the smooth sheet which has been constructed, lines and positions were plotted. All soundings were plotted in even

fathoms except those less than 5 fathoms where the fractional parts were reduced to one quarter fathoms. The five, ten, twenty, fifty, and one hundred fathom depth curve was sketched in pencil on smooth sheets. Those of Brownson Bay were drawn in colored inks before instructions of putting them in pencil were noted.

Tides were observed at Minnie Bay on a plane tide staff, the first half of the season while working in Dixon Entrance and Eureka Pass, and the soundings for this area were reduced to a computed datum plane of mean L.L. water from the observed tides at the automatic Gauge in Tah Bay, comparative simultaneous readings having been duly made. The other half of the season while the work was being done in Cordova Bay, tides were recorded in one of the bights northeast of the Eureka Pass Narrows by automatic tide gauge. These tides were used in the reduction of soundings taken in Cordova Bay to the mean lower low water datum plane computed from the low tides recorded by automatic gauge. (see detailed report on tides forwarded with tidal records).

The character of the bottom in the vicinity of Point Marsh and the Barrier Islands is, thruout, hard and rocky. The only soft bottom is found north of Eureka Pass and head of Hunter Bay. The small bays which are entirely away from the sweep of the sea only have a shallow covering of soft mud and sand, and only fit for launch anchorages.

All soundings north of Center Island, Eureka Pass, were

plotted on subsketch on a larger scale in order to define the channels in vicinity of Center Island more clearly. Those run by Str. "Cosmos" were plotted on main sheet as well as on sub-sketch.

Vol.4 of the records contain soundings on both sheets **A** and **B**; there was no other blank sounding book available aboard the "Cosmos" at that time. In other cases some pages were inserted from other volumes to make the agreement that the whole of a sounding record, should contain soundings of only one sheet; as in volume 12, page 36, sounding pages were inserted to go on sheet **C**, as this volume already contains soundings of sheet **C**, done by Str. "Gedney". In volume 3, page 50, soundings were copied from volume 9, page 4 and 5; they were independent soundings made at end of season to fill open spaces shown on boat sheet (sheet **A**). They are therefore, transferred to a volume containing soundings of sheet **A**. The directions given in records and also in this report, except sailing directions, are true with respect to the north and south meridian. Distances in statute miles in records.

GENERAL DESCRIPTION OF THE COAST.

The appearance of the coast bordering on Dixon Entrance is that of a bold coast, barren and inhospitable, below the tree line; fringed with numerous rocks and outlying islands and thus very irregular, corresponding to the irregular bottom off the coast. It is broken by a large bay and several smaller bays

and heights. The land rises directly into the mountains that continue far inland towards the north, and the snow covered peaks of those higher and further inshore are visible only a few miles off shore. Among the higher peaks nearby are Mt. Nichols and Bald Mountain. Mt. Nichols is easily distinguishable as the highest peak in that vicinity and Bald Mountain is the bare mountain of whitish gray appearance that lies west of it. To the westward of these mountains the land slopes gradually downward until a low stretch of wooded country appears, still further west of this the coast is interrupted by a large body of water extending to the northward known as Cordova Bay. The low country seems continuous from a distance, but is in reality a large group of timbered islands generally running north and south. They are known as the Barrier Islands.

Leaving Dixon Entrance and entering Cordova Bay the Barrier Islands appear on the east side. They extend about 4 miles to the north, and then form the southern border of a large opening of Cordova Bay, which is cut thru by several straits running about north and south between the islands from Dixon Entrance. Only one of these, however, is clear enough for navigation, known as Eureka Pass, and is the easternmost pass-between the mainland and the Islands.

After entering this opening of Cordova Bay the Ship Islands, which form the westernmost point of its northern shore (and from where the Bay continues in a northeasterly direction) can be easily seen separated from the mainland when reaching the center of the arm. Several high mountains are seen on

the northern shore. A distinct range runs north and south along Klakas Inlet.

The eastern shore is low with mountains in the background those seen from Dixon Entrance. St. Nichols shows at nearly every place in the bay towards the southeast. Turn Island with a small stunted growth of trees has the appearance of a rectangular building. A church painted white comes into sight after passing the islands that lay back of Turn Island. It can be seen from the south a long distance, and also visible at a point in Dixon Entrance thru the islands of Eureka Pass. The Church is at Klinkwan, an Indian village. Back of the village is a prominent conical mountain whose top is covered with evergreen and by some known as the "Green Monster".

The eastern shore when approaching nearer will be found to be more irregular than appeared at first with outlying islands and bays that traverse considerable distance inland. See complete description of elevations and topographic features rendered with plane-table sheets.

OUTLYING AND INSHORE DANGERS AND ISLANDS.

The coast of Dixon Entrance is fringed with numerous islands and rocks some of which are covered at high tide. The 20 fathom curve runs along an average of half a mile away from the main shore line and includes all the rocks lying along the coast; anything less than 20 fathoms should be approached with caution.

A dangerous rock is situated in the middle of the channel to Brownson Bay, covered at half tide, good depths of water

however, surround the rocks on all sides. The channel on the west side is more favorable for navigation. To the westward of these rocks a belt of very deep water was found extending far up the bay. From the two islands north of the rocks foul ground extends to the northwestward with a rock 120 meters off shore from the island bare at half tide and is surrounded by kelp; also to the southwest there is a rocky ledge about 100 meters in extent off the same islands. Off the south end a rocky ledge lies 260 meters off, surrounded by kelp. East of these islands and along the mainland down to a point marked by a round white rock the water is extremely foul. A launch of 6 feet draft may ply its way between the islands and rocks to an anchorageⁱⁿ Little Brownson Bay lying behind the islands. It is to be entered from the south following along the west side of the first island (round and wooded), then between the rocks along the mainland that bare at low tide, and the two small islands and a rocky ledge (both the rocky ledge and islands extending south from the larger island) until a small islet is reached to be passed on starboard hand, avoiding a small ledge of rocks that extend just to the west of the islet. The passage is very narrow up to this point and widens into the bay after the Islet is passed. The northern passage between Brownson and Small Brownson Bay can only be used by very small boats. The bay is ^{for launches,} a very good anchorage except for the willa-was that reach it from the mountains during southeast gales. Here is a prospectors log cabin and an Indian fishing shack.

A rock awash at high tide will be found in middle of Brownson Bay, $3/8$ mile from its head. The bight at the entrance on the west side of Brownson Bay is foul and useless for anchorages, likewise the two bights east of entrance to Brownson Bay along the Dixon Entrance coast. They afford no shelter being open to any of the prevailing southwest or southeasterlies; their shores are fringed with rocks.

The most numerous outlying rocks are found off Point Marsh and between Point Marsh and Mexico Point. The outer rocks are covered at high tide. The two most dangerous are the one farthest out, in rounding Point Marsh to the south and westward and the other in turning into launch passage to Minnie Bay, they bear N.31 E. 770 meters and N.38 W. 1560 meters respectively from West, or with reference to the southern island of a group lying most westerly off Point Marsh. No dangers are known to exist outside the outer rocks.

Several islands and rocks lie along the coast extending north of Point Marsh. Thru them is a launch passage from the narrows back of Point Marsh. A line of soundings was run showing the passage. It is practically a straight course. The first rock from the narrows is passed on starboard hand and launch heads for middle of two rocks lying ahead passing thru them.

A breaker was noted on a line between Point Marsh and Mexico Point, and position taken by sextant angles about 400 meters from place where it was breaking. The plane-table cuts agreed with the other position taken. Eighteen fathoms were

found near it. The breaker shows only during very heavy weather.

A large ledge of rocks extend about 300 meters south and east from Mexico Point also a kelp patch lies off in that vicinity, indicating foul ground. Two rocks near shore lie 400 meters N.X E. of Mexico Point. Mexico Point is the west point of small island that lies off the large island at the entrance to Eureka Pass. Signal "Mex" is located on the extreme point.

Dewey Rocks are a group of five or six rocks forming a rough circle, with the largest about 25 feet high, which lies about one and three quarter miles S.x E. of the western most of the Barrier Islands. There are no outlying dangers off these rocks the 20 fathom curve encircling the rocks no farther off than 250 meters \odot N.1/2 E. of the rock about one nautical mile is a kelp patch with two and half fathoms of water. Between this kelp patch and Dewey Rocks is deep water, 30 to 40 fathoms. This rock may be the supposed rock mentioned in the "Coast Pilot". Another kelp patch is found about the same distance from Dewey Rock but N.N.W. of them, 14 fathoms were found near it.

A kelp patch with four and half fathoms (least obtained) lies about midway between Mexico Point and Dewey Rocks and about three quarters mile southwest of a black island, the southern most of the Barriers.

Along the whole south-west coast of Prince of Wales Id. and especially at Point Marsh and Mexico Point the sea breaks

heavily. As noted elsewhere in this report heavy tide rips form off Point Marsh and are at times confused with the breakers which indicate the shoals off the point.

The rocks and coast-line are barren for an elevation of 100 to 150 feet and show the erosive action of the heavy seas that pound the coast during southerly and southwesterly gales.

There are several dangers in Eureka Pass generally marked by kelp. To the east of the first large island, true north of Mexico Point("Lunch" was built on the most western point of the small island laying west and close to the large island above mentioned). The kelp extends from the island to a point 200 meters southwest of "Lunch" with one and half fathoms water. Two other patches further out lie 500 meters N.N.W. with one fathom, least sounding, and about 500 meters S.S.W. with 5 fathoms least sounding. All marked by kelp.

There is some kelp around Far Point extending 200 meters north by east of it, three fathoms least sounding found in the kelp, however, the western side of the pass the water is deep and free from dangers as far north as Center Island. From off the point just west of Far Point foul ground extends for 650 meters southward. Far Point is clear and can be approached on south and east side within 75 to 100 meters. Just abreast of Center Island the channel is quite complicated and has been well developed as shown in accompanying sheet. A rocky bottom surrounds Center Island with 4 fathoms 60 meters west and two and three quarter fathoms 40 meters east of the island. Three hundred meters west of Center Island lies a rock covered

at extreme high tide; a kelp patch lies N.E. of this rock 100 meters distant, and 280 meters W.N.W. of the island. The north east end of this kelp patch covers a small rock with a least depth of two and half fathoms. Between Center Island and the rock together with the kelp patch 9 to 23 fathoms can be found, running midway; The shoalest water lying at north east end of the kelp patch. A safe distance from center of the kelp would be about 200 meters. The rock, mentioned above, is steep on its east side. The midchannel course from hereon thru to the narrows will be met with no obstructions. The 10 fathom curve extends across the channel of Center Island as shown on sheet. Also the 5 fathom curve extends off the north point of Center Island about 150 meters. To the southeast off the island about 200 meters 7 fathoms were found but no kelp reported; as noted in "Coast Pilot". Between it and the island is 17 fathoms of water.

West of Center Island 400 meters is a shoal of rocks 30 meters wide with 3 to 4 fathoms, least depth over it, running north and south; parts are covered with kelp. Between this reef and the rock to the eastward the depths of water are from 9 to 17 fathoms, 9 fathoms depths extending northeast of the reef. A little to the east after passing the rocks about 200 meters the water continues quite deep in a true northerly direction for about a mile, passing between two 5 fathom places 300 meters apart, west of Leading Point, with depths to 30 fathoms between them. The eastern one is 300 meters west of Leading Point. A rock just awash at high tide lies 150 meters west of a point of southern end of narrows. The west channel of

Of Eureka Pass is westward of this rock. The 5 fathom curve lies about 70 meters west of the rock, and then becomes deep at a very little distance in that direction. It is difficult to identify the kelp patches during a choppy sea, and therefore the safest channels are those lying directly on either side of Center Island.

After leaving the narrows the first danger to be accounted with, is a submerged rock surrounded by kelp and 200 meters E.N.E. of western point of northern end of pass. It carries one and half fathoms and should be kept on port side by keeping last course thru narrows heading just westward of Guide Rocks, which lay ahead, 300 meters west of the first island northeast of the pass. The Guide Rocks are of a grey appearance, and can be seen when passing thru the narrows; they are covered at high tide.

There are several broad shoals in the arm of Cordova Bay, north of the Barrier Islands. They were all carefully examined, and the least sounding obtained on any of them was no less than 6 fathoms.

Wallace Rock, just bare at spring tides, is very dangerous. It lies on a line between the most northern island of the Barriers and Bird Rock, 400 meters north of the intersection of this line with another between Boat Rocks and Turn Island; or 1.3 miles north of the first island mentioned above. It is covered with kelp, but not easily distinguishable. All around the rock is deep water, not very far off, and the general shape of the rock being a cone; 760 meters E. by S. of the rock lies a shoal 2 fathoms least sounding.

The 10 fathom curve runs along parallel to the shore 270 meters west of Turn Island.

Turn Island Reef with ledges of rock extend about 220 meters east around to north of Turn Island further than this towards the northeast the water becomes very deep, 40 fathoms; it is a channel probably cut out by the tide waters of the inlet to the north. The channel extends northwest to southeast. Thruout the bay a network of narrow channels of very deep water will be found running between the several shoals probably gouged out by the constant running in and out of the tides.

Boat Rocks, two in number, lie furthest northwest off the Barrier Islands. A ledge of sunken rocks extends about 100 meters north of the main rocks, and kelp lies north and west of the rocks. The Boat Rocks, two small islands (20 feet high lying about $1/3$ the way to the pass from rocks) and another island another $1/3$ the way to the pass or northern most of the first eastern large group of Barrier Islands, are the three furthest outlying islands and rocks north of the Barriers. The bay is clear north of these with exception of Wallace Rock, mentioned before.

All the Barrier Islands and rocks lie east of a line drawn from Boat Rocks to a couple of outlying rocks 400 meters southwest from the middle shore line of island which is the most southwesterly of the Barriers or Round Islands; from this point a line to Dewey Rocks will pass thru the kelp patch described. West of these lines the water becomes very deep and is free

from danger. It is the main entrance to Cordova Bay and in places is over 200 fathoms deep. Just east of the first line mentioned the water is covered with great bunches of kelp and countless number of rocks are found. A group of wooded islands lie separate from the Barrier off towards the southwest, known as the Round Islands.

Bird Rocks, lie a little outside and to the southward of a line Turn Island to Shipwreck Point (Shipwreck Point, small island furthest east about this point). A ledge of rocks 80 meters wide extend 230 meters North by East from the main large rocks which are about 30 feet high. They have a grey appearance with a rounded white pinnacle rock which forms the highest point of Bird Rocks. East about 200 meters from these rocks are a group of smaller ones covered at high tide and are marked by kelp on the east side.

A rock bare at low waters lies about 200 meters southeast of the larger rock and kelp lies to the southeast of same.

There are no outlying dangers south of lines drawn between the three points, Turn Island, Bird Rock, and Shipwreck Point.

Behind the group of islands northeast of Turn Island and behind Bird Rocks the cannery boats from Hunter Bay find an inside passage to get north of Shipwreck Point. The passage is marked on the survey by line of soundings to Shipwreck Point. (north of small island). In the passage northwest of Shipwreck Island there is a sunken rock with only a narrow curved channel to the west of it allowing launches of 6 feet to pass thru at low water. The safer way for boats not acquainted with this

passage, is to go thru the passage west of the former described, and between the outlying Ship Islands and the mainland. A rock lies in the middle of the southern entrance of this pass but can be avoided by rounding the first island closely.

The Ship Islands have a very irregular coast line. Ledges of rocks extend from several places. A broad ledge of rocks extends south and southwest 300 meters off the southern most of the outlying Ship Islands. Kelp lies to the eastward and to the south just outside the ledge in great bunches.

Rocks do not ^{appear as bold} along the coast of this arm as in the case of the coast of Dixon Entrance, and the waters outside the 10 fathom curve are clear from ^{known} danger, except in few cases of outlying rocks and islands where ^(10fm curve) noted in the foregoing report. It runs along the main shoreline off an average distance of 100 to 200 meters. The water near the shore was not well enough developed to trace 5 fathom curve, since the ten fathom was found so close in that, there was no necessity of it.

A reef of rocks partly bare at low tides extend in a westerly direction 250 meters from the southern point of the end of the peninsula formed by Hunter Bay and Tah Bay. It then slopes off directly on west and south sides into deep water of some 45 fathoms which channel of deep water continues southward and into Tah Bay. Likewise at middle point of same peninsula, a reef of rocks extends 100 meters to the east and this condition of coast continues to and at Turn Point; the low water line extending out 150 meters around this point. The ten fathom curve is similar in shape to that of the high water line

around the point with an almost equal distance of 250 meters away from it at every point. The distance lessens after getting into Hunter Bay becoming about 100 meters from the northern part of the point, with the 20 fathom curve another 50 meters away. A little to the eastward around the point, the low water mark projects 50 meters forming a mud flat at low tide. The ten fathom curve follows along the north side of Hunter Bay, an average of 100 meters away from high water; on the south it runs in about a straight line from the point to the north of the small islet, thus the channel narrows at this point, but again widens into the remainder of the Bay up to the cannery. A flat of shale and mud extends about the island ^{which lies} south half east ~~from~~ the cannery. The remainder of the bay is unnavigable.

The channel about midway to Hunter Bay cannery, in Hunter Bay, is contracted by an islet and a rock in a bight just north of the islet.

ANCHORAGES AND PLACES OF REFUGE.

Brownson Bay: An anchorage for large vessels but perhaps dangerous to make in thick weather owing to the outlying dangers off Point Marsh, is near the head of this bay. 15 to 17 fathoms of water, hard bottom, may be had south of the rock near head of bay, but at this place a ship is not well protected from wind, particularly in a S.W. gale. No sea reaches this place, but similar to Nichols Bay the wind draws thru with great force.

Little Brownson Bay: For small boats and launches, etc.,

very good except for the willa-was that sweep into the bay from the mountains.

Minnie Bay: A small land locked and well protected from winds, and no swell whatever, muddy bottom. This anchorage is often used by small crafts on their way eastward to await the passing of a storm. It is about half way of the open waters used by launches in passing around the south end of Prince of Wales Island.

Hunter Bay: A good anchorage, mud bottom, abreast the dock in 10 to 15 fathoms of water. On the south shore of Hunters Bay, opposite the wharf, is considerable flat beach and may be of advantage for beaching a vessel.

Klinkwan Harbor: Anchorage for small boats. There is buoy with 4 fathoms of water. A fairly even beach is exposed at low water and can be used for beaching vessel for slight repairs.

Anchorage may be had on the several shoals in eastern arm of Cordova Bay for large vessels. A fair anchorage is behind Anchor Island in 17 to 20 fathoms water, hard bottom. The "Gedney" lay here the greater part of the season and found it favorable. Another temporary anchorage can be had in the bight south of the narrows in Eureka Pass, hard bottom, but little on no current.

The Coast is generally rocky and does not afford any good beaches for beaching vessels. Some broad beaches may be found in the Inlets, a few of which have been mentioned.

A very good anchorage in 9 to 15 fathoms is to be had

about 950 meters N.1/2 E. (true) of Guide Rocks. From this anchorage Guide Rocks appear about half way between Eureka Narrows and the island east of Guide Rocks; Bearings : Left tangent Anchor Island, due east (true) Left tangent of first island N.E. of Eureka Pass S. 27 E. (true). Anyplace in this vicinity between the ten and twenty fathom curve is excellent holding ground with sticky mud bottom. This is the last anchorage to be had on leaving Cordova Bay, south bound, and is recommended for vessels awaiting fair weather to cross Dixon Entrance.

, CURRENTS.

The currents are fairly strong due to the large fall and rise of the tide and character of the contracted waters; an estimated velocity of one to two knots at strength of tide. The currents thru Eureka Narrows are not dangerous as they are found only in mid channel, with no swirls or whirlpools, near shore the current slackens. The flood sets from south to north and ebb north to south. On approaching Eureka Pass from the southward at ebb tide, a strong current sets out from Hessa Inlet and the bays east of the channel. The ebb setting to the westward along the south coast of Prince of Wales Island causes high tide rips. The tidal current over the area north of Barrier Island is slight.

Owing to the general character of the forelands back from the shore and to the extent of outlying dangers, whistle echoes are of no value in giving warning while approaching the coast in foggy weather.

PORTS.

There are no ports of any importance. Hunter Bay is the name of a cannery shipping an average of 40,000 cases of salmon a year. They employ the Indians during the fishing season in the canneries and have their homes in Klinkwan an Indian village.

There is a dock carrying 15 feet of water, low tide, at Hunter Bay. A small passenger launch "Alert" stops at this place at times. The cannery is equipped with 5 or 6 fishing launches. Slight repairs can be made here in the machine shop belonging to the cannery.

A few prospectors traverse the country, and few bornite claims are located in Little Brownson Bay.

WATERING PLACES.

Vessels may water in Brownson Bay from a waterfall just above the narrows in bight on west shore. It has sufficient head to use hose as means of carrying the water. A ship well brought near the waterfall, held by anchor from the stern, can be kept in position by lines from shore to prevent it from swinging upon the rocks on the shore. Other small waterfalls may be found in Cordova Bay just south of Tah Bay.

Hunter Bay cannery has facilities for watering ships, it being piped down to the dock; but it is very poor drinking water. Fresh water was obtained along the south side of Tah Bay.

WEATHER.

Nearly the entire season the country was visited by fine drizzling rains with an average exception of approximately one clear day out of ten to fifteen. These rains were accompanied by south easterly winds which without fail bring rainy weather and bad blows at times.

The south easterlies and south westerlies are the prevailing winds. South westerly sometimes brings rain and generally severe blows, making it very rough along the Dixon Entrance coast, and entrance to Cordova Bay.

In the history of the Indians and all the people there was never experienced as wet a season as the last, (1909). It is said that the three summer months; June, July, August, are generally clear. June proved to be clear the greater part of the month. A wind hauling from the west, north, or a north-westerly bring fine clear days and the atmosphere is very clear the interior mountains showing plainly and at times the mountains on the Queen Charlotte Islands show on the south horizon. During the fall and winter the seas are very rough owing to the severe blows. The temperature during the summer months was moderately warm, during the winter it is said to be very stormy.

Fog appears suddenly at times, due to the warm breeze blowing from the west; the breeze having probably generated over a warm current of water far to the westward. We were caught out in Dixon Entrance several times under such conditions, while sounding. The fog would last for an hour or two and would clear away generally shortly before noon. Fogs

sometimes are closely followed by rains and very thick mist.

SAILING DIRECTIONS AND COURSES.

The courses written under this heading are correct magnetic, a declination of $28^{\circ} 45'$ being used. Courses are also given from the true north and south meridian, and denoted as "true Course". All distances are in nautical miles.

TO ENTER CORDOVA BAY FROM DIXON ENTRANCE.

At a point $3/8$ miles off the ^{*}Brown Bear, the course changes (having approached from midway between Point Nunez and Nunez Rocks) to W. by S. $5/8$ S. ($W. 10^{\circ}$ N., true) for 5.7 miles to a point about 1 mile off Δ West. (West is the same as that described on page 8 lines 14 and 15); making good this course the outermost rocks, to the southward off Point Marsh, will have been given a clearance of approximate one half mile. The course then changes to W. $3/8$ S. ($W. 28^{\circ}$ N. true course) for 6.2 miles, until abreast and $3/8$ miles off the southern most of the Dewey Rocks. The current setting to the N.E. at flood and S.W. at ebb (estimated 1 to 2 knots) along this course may set a vessel off, therefore care should be taken to allow for

* This name locally applies to a rock just off the third prominent point west of Brownson Bay, which has the appearance of a huge brown bear rising out of the water. Δ "Surf" is on this rock, and marks the eastern limit of the seasons work (1909). See description of this rock in report accompanying topographic sheet of Nichols Bay and topographic sheet showing Brownson Bay.

the set of the tidal current, particularly at flood tide. Dewey Rocks are always visible and can be approached close to; but in running from Dewey Rocks to the eastward to round Point Marsh, great care should be taken in thick weather, to avoid the breakers off this point, also to make proper allowance for tidal currents. Heavy tide rips form to the southwest of Point Marsh which resembles breakers at times. From the point .4 mile south of Dewey Rocks, change course and steer N.W. by W. $1/2$ W. ($N.33^{\circ}$ W. true) giving berth of approximately $3/8$ mile to Dewey Rocks, making good this course you will pass .6 mile off the southwest point of Round Islands, and .35 mile off the rocks that lie to the westward and southwest of Round Islands. Continue this course for 2.5 miles until the rocks, last mentioned, and the southern points of the two Round Islands, are all three in range. These two southern points are easily distinguished bearing E.N.E. $1/4$ E. If bound for Hetta Inlet change course at this position to N.W. $1/4$ W. or more accurately N. $19^{\circ} 15'$ W. (true) If this course is made good for 12.1 miles, it will lead to a position 1 mile S.W. by W. from Point Webster; from hereon follow sailing directions given in "Coast Pilot 1908", as the hydrographic survey of the season did not extend further north than Shipwreck Point.

If bound for HUNTER BAY from the position, which is .7 mile to the westward of the Round Islands, change course to N. by W. $5/8$ W. ($N.10^{\circ}$ E. true). Holding this course for 2.9 miles, Boat Rocks will be abeam on starboard hand $1/2$ mile distant. At this point change course to N. $3/8$ E. ($N.33^{\circ}$ E. true) heading for Bird Rocks. These rocks stand out well,

the white-washed pinnacle distinguishing it from any rock near the coast. Bird Rocks show in range with the southeast point of the large island directly north of the rocks. Hold the course for 2.4 miles, when the west side of Ship Islands will bear N.W. by W. $7/8$ W. and showing directly in range with the small island off Point Webster, known as Clump Island. Turn Island with the lone clump of trees on it will bear N.E. $3/8$ E. From this position change course to N.E. $7/8$ E. passing $1/4$ mile to the southward of Turn Island. Continue this course past Turn Island until the church of Klinkwan is in full view, bearing N. $1/4$ W. Then haul to N. by E. $1/8$ E., stand in on this course until Turn Point is abeam. Round Turn Point at a distance of 200 to 300 meters, heading up into Hunter Bay on a general $N.1/4$ N. course. The small island in the center of the channel will show directly ahead. Keep mid-channel until approaching the island. Pass to the Northward of the island but not more than 30 meters off to avoid the rock in the small bight north of the island. (In leaving Hunter Bay a vessel is liable to give the island too wide a berth owing to the appearance of the bight north of the island. This bight appears much larger and clear when approached from the eastward.) After passing it keep mid-channel to abreast the Cannery, where anchorage is had in 15 fathoms.

ENTERING CORDOVA BAY VIA
EUREKA PASS.

From a point $1/4$ mile off Mexico Point steer N.W. by N. $1/2$ N. (N. 1° E. true) for $1-1/2$ miles until abreast of Far Point,

which should be about $1/8$ to $1/4$ mile distant, on port hand. When abreast of Far Point change course to N. by W. $3/8$ W. (nothing to the westward) (N. 8° E. true), keeping Center Island open on the starboard bow. Center Island can be approached within 50 to 100 yards, and a good deep channel can be had on either side, rounding the island at a distance of 50 to 75 meters. The west side of the Island gives a clear channel 130 meters wide, with little change of course; while the east side is a wider channel, but necessitates a sharp turn to avoid the low point and ledge of rocks east of Center Island and then to round Leading Point. When abreast Leading Point keep mid-channel thru the Narrows. When the northeast point of the Narrows is abeam, change course to N. $3/8$ W. (N. 24° E., true) having Guide Rocks open on the starboard bow. Directly ahead will show the small islet on which the hydrographic signal "Bet" is located and is easily distinguished, as the west side of this island has a gradual slope. The tree line is well back from the high water line and have a decided lean to the eastward, the break between it and the larger island immediately to the eastward of it, shows on leaving the Narrows. As Guide Rocks are covered at extreme high tides, and in order to avoid the rock 200 meters N.E. of the northwest point of the narrows, this course and range should be followed closely. From the north end of the Narrows the white church at Klinkwan shows prominently. Eureka Narrows are very hard to distinguish on approaching from the northward. From Turn Island head directly for the clump of sharp pointed hills which lie on the

east side of the Narrows, holding the course till Guide Rocks are passed and the Narrows open thruout.

The survey developed the broad northwest channel of Eureka Pass and by following the chart closely good clear water can be had, but owing to the confusion of islands and small passes that make off from this channel, it is not recommended to strangers until properly buoyed. The sides of Center Island, Leading Point, and the Narrows are fairly steep to and can be approached closely making excellent guides for the navigation of these waters.

When abreast of Guide Rocks if bound for Hetta Inlet or Tlevak Straits, change course to N.W. by W. $3/4$ W. ($N.36^{\circ} 30'W.$ true) heading midway between Turn Island and Bird Rocks. Hold the course for $2-1/4$ miles when the church of Klinkwan will shut in on a N. bearing. From this point change course to $W.3/8$ S. ($N.65^{\circ} 30'W.$, true) opening the Ship Islands on the starboard bow, and passing $3/8$ to $1/2$ mile to the southward of the ledges making off the south point of Ship Islands.

If bound for HUNTER BAY steer N.W. $1/2$ N. ($N.10^{\circ} 30'W.$, true) until abreast of Turn Island. Then follow the directions for HUNTER BAY previously given.

To enter BROWNSON BAY approach the two islands at the southwest entrance point on a general W.N.W. course if bound from the eastward. If from the westward keep one mile off Point Marsh until Brownson Bay opens up thruout to its head, and stand in on a N.W. by N. $3/4$ N. course. Keep the southwest entrance islands distant about $1/4$ mile on port hand,

and pass mid-channel between them and the ledge of rocks, which lie directly in the center of the main entrance. When these islands are abeam change course to N. by W. $3/4$ W., approach the shore to about $1/4$ mile, and stand off the west shore about $1/8$ to $1/4$ mile to the head where anchorage is had in 10 to 20 fathoms.

Report compiled by,

F. B. I. Siemens

Aid, C. & G. Survey,

Hydrographer.

Revised and approved,

R. B. Benson

Asst., Comdg. *St. Beane*

Statistics of Hydrography

Season 1909.

Cordova Bay, Frigee of Wales Id., Alaska.

R.B. Derickson, chief of party
command U.S.S. Gedney.

Day	Miles (statute) (sounding lines)	Soundings	Angles	Day	Miles (statute) (sounding lines)	Soundings	Angles
A June 10	25.5	62	125	X Aug 28	34.8	83	164
B June 14	7.0	16	33	Y Aug 31	10.4	28	56
C June 15	6.7	19	34	Z Sept 1	9.0	24	46
D July 3	5.5	33	66	aa Sept 3	15.0	117	144
E July 30	6.2	18	40	bb Sept 4	23.9	61	96
F Aug 5	30.5	58	116	cc Sept 6	9.6	28	44
a June 4	25.5	140	278	dd Sept 10	6.1	175	124
b June 5	18.1	98	194	ee Sept 20	11.8	153	110
c June 7	16.3	86	172	ff Sept 21	9.0	239	172
d June 8	2.0	11	22	gg Sept 24	4.0	102	48
e June 9	5.2	26	52	hh Sept 25	6.3	168	128
f June 10	6.0	30	59	a Aug 12	15.0	305	264
g June 11	1.0	5	10	b Aug 13	12.0	279	192
h June 12	15.6	78	140	c Aug 19	9.2	216	160
i June 15	5.8	28	54	d Aug 27	1.5	116	40
k June 16	20.6	104	182	e Aug 28	6.0	565	240
l June 17	22.5	182	198	f Jun 18	0.0	4	8
m June 18	8.3	100	132	a Aug 30	5.5	238	142
n June 19	11.5	106	148	b Jun 19	4.0	25	53
o June 22	20.0	85	164				
p June 23	8.6	42	64	Total	971.2	7805	8554
q June 24	25.2	133	198				
r June 25	7.3	51	72				
s June 26	36.2	127	244				
t June 28	35.0	154	262				
u June 29	14.0	57	86				
v June 30	10.8	53	76				
w July 1	16.4	98	176				
x July 2	11.5	93	134				
y July 15	12.0	185	182				
z July 22	12.3	81	92				
A July 23	16.5	109	106				
B July 24	18.6	176	146				
C July 26	35.7	230	187				
D July 27	35.7	207	180				
E July 30	15.7	94	82				
F Aug 2	10.4	62	54				
G Aug 3	33.2	173	157				
H Aug 4	29.6	96	150				
I Aug 5	4.5	127	236				
J Aug 6	21.4	166	196				
L Aug 7	9.0	58	84				
M Aug 9	21.1	172	184				
N Aug 10	11.2	123	116				
Q Aug 14	15.0	182	144				
R Aug 17	2.2	24	20				
S Aug 18	14.0	184	184				
U Aug 20	2.0	56	30				
V Aug 21	11.7	173	138				
W Aug 24	21.5	108	124				

(This sheet to be accompanied
with Descriptive Report)

All soundings on Sheets A, B, and C are expressed
in fathoms.
From Jun 18 to Sept 25 Tides were recorded at automa-
tic gauge one mile NE. of Nend of Eureka Pass
From Jun 2 to Jun 17 Tides were observed on plain
staff in Minnie Bay Point Marst. Comparative
readings were made and all soundings were reduced
to the mean lower low water observed at Automa-
tic gauge, which corresponds to 2.5ft. on staff (Auto-
matic). The plane of reference was computed from
73 observed Lower Low waters.
Lowest tide at station is .5ft. below zero.
Highest tide at station 16.9ft. above zero.
(See special report on tides rendered with Tidal Records.)

U.S.S. Gedney * U.S.S. Cosmos * Whale boat. * Launch #27

Sta.	Lat.	D. P.	Long.	D. M.
Hat	54 46'	984.3	132 20'	921.3
No	54 46'	810.0	132 20'	111.0
Come	54 46'	591.0	132 20'	964.3
Nut	54 46'	1161.6	132 21'	75.5
Dump	54 46'	870.0	132 22'	464.9
Lunch	54 47'	377.1	132 22'	415.8
Front#	54 48'	129.8	132 22'	701.4
Mimas	54 48'	769.3	132 22'	515.1
Ruth	54 48'	1103.8	132 22'	222.6
Sol	54 48'	1091.0	132 22'	677.6
Pin	54 48'	1071.5	132 22'	926.2
Stub	54 48'	1556.8	132 22'	499.5
Treg	54 48'	1563.3	132 22'	23.5
Bo	54 48'	1694.2	132 22'	212.8
Can	54 49'	369.5	132 22'	196.2
Chop	54 49'	520.2	132 22'	978.6
Tack	54 48'	1485.2	132 22'	744.3
Clio#	54 48'	1825.2	132 22'	931.6
Verdi	54 48'	1205.9	132 23'	794.3
Gris	54 48'	778.1	132 23'	444.3
Tori	54 48'	73.8	132 23'	494.6
Dope%	54 47'	835.5	132 23'	255.3
Dio	54 46'	974.0	132 24'	492.6
Black	54 45'	1446.3	132 25'	666.6
Ceph	54 47'	331.3	132 24'	890.5

Sta.	Lat.	D. P.	Long.	D. M.
Tan	54 47'	687.3	132 25'	440.0
Rag	54 48'	250.6	132 25'	93.7
Creek	54 49'	1110.0	132 24'	244.7
Bad	54 47'	296.7	132 28'	146.2
Fall	54 46'	900.6	132 29'	322.5
Flg. on rck.				
S. of Out	54 44'	1026.2	132 19'	602.0
Flg. W. of				
To	54 43'	992.9	132 16'	821.7
Flg. W. of				
To on rck.	54 43'	817.8	132 16'	898.6
Flg. on rck.				
W. of Yet	54 46'	586.5	132 21'	573.0

Note:

#(page 2) determined by theodolite.

/(page 2) not used in hydrography.

List of Plane Table Positions,
Hydrographic Sheet A

Sta.	Lat.	D. P.	Long.	D. M.
Bet	54 42'	648.2	132 11'	801.3
Mid	54 43'	1176.3	132 14'	957.2
Steve	54 44'	745.9	132 14'	423.8
Dead	54 44'	1608.8	132 14'	482.9
Pole	54 45'	1136.1	132 13'	831.6
Rock	54 45'	1635.0	132 14'	94.8
In	54 44'	1705.3	132 14'	704.0
May	54 44'	1349.7	132 14'	892.2
Tre	54 44'	607.2	132 14'	1036.8
To	54 43'	905.4	132 15'	00.0
Flag	54 43'	992.9	132 16'	821.7
Ent	54 42'	1551.9	132 16'	102.8
Bay	54 44'	231.0	132 18'	941.8
Out	54 44'	1598.7	132 19'	680.1
Col	54 44'	1683.6	132 19'	825.1
New	54 44'	1297.3	132 20'	703.6
Try	54 45'	256.8	132 20'	272.8
Hag	54 45'	654.3	132 20'	607.8
Go	54 45'	1302.6	132 20'	701.5
Buok	54 45'	1627.7	132 20'	871.8
Yet	54 46'	618.3	132 21'	24.3
Sin	54 46'	268.6	132 20'	959.2

List of Plane Table Positions

Hydrographic Sheet B.

Sta.	Lat.	D. P.	Long.	D. M.
Tori	54 48'	73.8	132 23'	494.6
Fall	54 46'	900.6	132 29'	322.5
Can	54 49'	345	132 22'	193
Rug	54 49'	572	132 20'	437
Sin	54 49'	1502	132 19'	796
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'	00
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
Peg	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
Buck	54 52'	526	132 19'	1062
Vat	54 52'	111	132 19'	534
Cow	54 52'	504	132 19'	483
Stack	54 52'	625	132 18'	1020
Bay	54 52'	523	132 18'	600
Pine	54 52'	140	132 18'	853
Sock	54 52'	289	132 18'	327
Sal	54 52'	412	132 18'	301
Tag	54 52'	829	132 19'	713
Rig	54 52'	1083	132 19'	1021
Pit	54 52'	1217	132 19'	655
Pug	54 52'	1666	132 19'	634
Pat	54 52'	1492	132 19'	836
Deck	54 53'	897	132 29'	770
Tang	54 49'	352	132 20'	143

Blue:- Hydrographic position, see end of Vol. 5
of records for sextant-angle position.

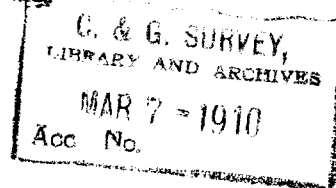
List of Plane Table Positions,
Hydrographic Sheet C

Sta.	Lat.	D. P.	Long.	D. M.
Bet	54 42'	648.2	132 11'	801.3
Black	54 45'	1446.3	132 25'	666.6
Fall	54 46'	900.6	132 29'	322.5
Blue				

For hydrographic position see end of
Volume five for Sextant angle location.

3042

Hydrographic Sheet A.



General Locality:

Dixon Entrance, Prince of Wales Island, Alaska.

Special Locality:

Δ Surf (a point 2-1/2 miles west of Pt. Nunez)
to Dewey Rocks, including Brownson Bay, and Eureka
Pass.

Hydrographers:

R.B. Derickson, Ass't.
Commanding U.S.S. Gedney, and chief of party.

G.A. Whitehead, Mate.

F.B.T. Siems, Aid.

Scale:

1/20,000

Season:

June 4 to September 25. 1909

Boats used:

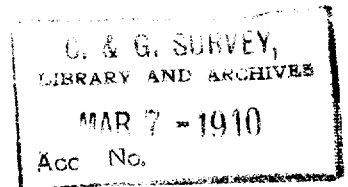
Gedney, Cosmos.

3042

Hydrographic Sheet A .- Sub-sketch

Locality:

Eureka Pass Narrows.



Hydrographers:

R.B. Derickson, Ass't.
Commanding U.S.S. Gedney, and chief of party.

G.A. Whitehead, Mate.

F.B.T. Siems, Aid.

L.O. Colbert, Aid.

Scale:

1/10,000.

Boats used: .

Cosmos, Launch #27, Whale boat.

V.E.C.
May 10, 1910.

HYDROGRAPHIC SHEET NO. 3042.

Dixon Entrance, Prince of Wales Island, S.E. Alaska,
by Asst. R. B. Derickson in 1909.

TIDES.

	Minnie Bay ft.	North end of Eureka Pass ft.
Mean lower low water, or plane of reference on staff	3.3	2.4
Lowest tide observed " "	0.3	-0.5
Highest " " " "	17.7	16.9
Mean range of tide	10.3	10.2

~~Coast and Geodetic Survey~~
MAY 10 1910
TIDAL DIVISION

V.E.C.
May 10, 1910

HYDROGRAPHIC SHEET NO. 3042a.

Entrance to Cordova Bay, Prince of Wales Island,
S.E. Alaska by Asst. R. B. Derickson in 1909.

TIDES.

	Minnie Bay ft.	North end of Eureka Pass ft.
Mean lower low water, or plane of reference on staff	3.3	2.4
Lowest tide observed " "	0.3	-0.5
Highest " " " "	17.7	16.9
Mean range of tide	10.3	10.2

Coast and Geodetic Survey
MAY 10 1910
TIDAL DIVISION.

3042^a

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Acc No.

Hydrographic Sheet C.

Locality:

Entrance to Cordova Bay, Prince of Wales Island,
S. E. Alaska.

Hydrographers:

R.B. Derickson, Ass't.
Commanding U.S.S. Gedney, and chief of party.

G.A. Whitehead, Mate.

F.B.T. Siems, Aid.

E.C. Kinnear, Aid.

Scale:

1/40,000

Season:

June 4 to September 25. 1909

Boats used:

Gedney, Cosmos.

V.E.C.
May 10, 1910.

HYDROGRAPHIC SHEET NO. 3043.

Cordova Bay, Prince of Wales Island, S.E. Alaska,
by Asst. R. B. Derickson in 1909.

TIDES.

	North end of Eureka Pass ft.
Mean lower low water, or plane of reference on staff	2.4
Lowest tide observed " "	-0.5
Highest " " " "	16.9
Mean range of tide	10.2

Coast and Geodetic Survey
MAY 10 1910
TIDAL DIVISION.

Hyd Sheet Nos 3042, 3042^a, 3043

May 20 1910

The area within the limits of this survey is apparently well covered with the exception of the shoal spots, all of which were not developed.

The soundings records were not kept separate for each sheet.

A. L. Simmons

Hyd Skut No 3043

May 20 1910

See report with Hyd Skut No 3042 + 3042^a