ALASKA COAST PILOT.

PART I.

COAST FROM DIXON ENTRANCE TO YAKUTAT BAY WITH THE INLAND PASSAGE.

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2nd ed.
1883
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INTRODUCTORY.

Treasury Department,
Document No. 449.
Coast and Geodetic Survey.

U. S. COAST AND GEODETIC SURVEY OFFICE,
WASHINGTON, D. C., *July 24, 1883.*

This volume of the Pacific Coast Pilot embraces the coast and islands from Dixon Entrance to Yakutat Bay, together with The Inland Passage by which the mail steamers of the United States and other steam-vessels are accustomed to reach the waters of southeastern Alaska.

The plan adopted in this work includes—

I. A general description of the coast line and of the shores of the several harbors and thoroughfares in geographical sequence from South to North.

II. A description of those dangers and obstructions to navigation known to exist on the coast and in the harbors, with directions for avoiding them.

III. Sailing directions for approaching and entering the harbors.

IV. Latitudes and Longitudes of important landmarks, headlands and special localities.

V. Practical information in regard to tides, tidal currents, ice, variation of the compass, and other matters of use to navigators on an unfamiliar coast.

VI. Views of the coast and of the entrances to the more important harbors.

VII. Charts of the coast on a uniform scale.

VIII. Useful information, including a catalogue of the charts useful in navigating Alaskan waters; astronomically determined positions of Alaskan ports, prominent headlands, etc., with the compass variations observed at these localities; a table of distances between points in Alaska and the adjacent region by the usual routes; a list of the steamer routes in Alaskan waters with references to the pages of the text where their different portions are described, in order to save frequent reference to the index; and, finally, tables showing the average temperature, wind, atmospheric pressure, etc., at various Alaskan stations, for each month and for the year.

A chart reduced to the epoch of 1885, showing the lines of equal variation of the compass over the territory, is included.

This was prepared by Assistant C. A. Schott and first appeared, with a discussion of the data, in Appendix No. 13 to the Report of the Superintendent of the U. S. Coast and Geodetic Survey for the year 1882.

Soon after the acquisition of Alaska, in response to the demand for some guide to the navigation of its waters, a comprehensive report upon the coast features and resources of that territory was made by Assistant George Davidson.

This report, which embodied the most trustworthy information on the subject, was published as Appendix No. 18 to the Coast Survey Report for 1867.

The same officer had previously prepared the Coast Pilot of California, Oregon and Washington Territory, two editions of which were published by the Coast Survey.

The materials for Assistant Davidson's report on Alaska were largely derived from a geographical reconnaissance conducted under his direction during the summer and autumn of 1867, and from the work of previous explorers, such as Vancouver and others. Subsequently, in 1869, when ordered to Alaska to observe the solar eclipse of that year, Mr. Davidson availed himself of the opportunity to verify and extend his former examinations. This work led to the publication in 1869 of a revised and much enlarged edition of his first report, in the form of an octavo volume of two hundred and fifty pages, under the title "Coast Pilot of Alaska, First Part, from southern boundary to Cook's Inlet."

Assistant Davidson having been charged with other important duties, including the direction of a party to observe in Japan the transit of Venus, the compilation of a new work, exhaustive of all known sources of information, was placed by Superintendent Patterson in the hands of William Healey Dall, Assistant Coast and Geodetic Survey, by whom the present volume, as well as Appendix No. 1 on the Meteorology and Bibliography of Alaska, separately published, has been compiled.

This volume includes the results of a coördination and digestion of the following material:

I. The charts and publications relating to Alaska, catalogued in Appendix No. 1, so far as they were accessible.

II. Mr. Dall's own observations and notes collected by him during the explorations of the Scientific Corps of the Western Union Telegraphic Expedition in 1865, 1866, 1867 and 1868.

III. The records of the U. S. Coast and Geodetic Survey Office, including the results of reconnaissance surveys by Assistant W. H. Dall and party during the seasons of 1871, 1872, 1873, 1874 and 1880; those of Lieut. Com. H. E. Nichols, U. S. N., Assistant Coast and Geodetic Survey, in Alaskan waters during the seasons of 1881 and 1882, as well as those of Assistant Davidson in 1867 and 1869, before mentioned.

IV. Various notes, sketches and observations communicated by navigators and others familiar with the coast, for whose assistance foot-notes throughout this volume contain the acknowledgments.

The views of the coast and approaches to the harbors were drawn by the officers of the Survey or extracted from the works of previous navigators.

The compiler, who has been ably assisted by Mr. Marcus Baker, has exercised his best care to avoid errors. Absolute accuracy in a work of this kind even when based upon accurate charts and modern surveys being generally admitted to be unattainable, the compiler desires to have attention directed, first, to the fact that the compilation, while representing as nearly as practicable the present knowledge of the subject, is in a large part necessarily based upon ancient and often conflicting records of navigators not specially educated for hydrographic surveys and must be more or less imperfect in details; and, second, to the desirability of improving our imperfect knowledge, as here presented, by such corrections, additions and new information as almost every navigator in the Alaskan region will find it in his power to supply.

Such information should be addressed to the Superintendent of the Coast and Geodetic Survey, Washington, D. C., and will in future publications be credited to the persons furnishing it.

J. E. HILGARD,
Superintendent.

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NOTE.

All **bearings** and **courses** are magnetic.

All **distances** are in *nautical miles.*

All **depths** are at *mean low water*, when known, unless otherwise stated.

A **cable length** is *one-tenth of a nautical mile.*

All **longitudes** are *west from Greenwich.*

Russian fathoms being seven feet long, are here reduced to six-foot fathoms.

The **spelling** of Russian and native names is as nearly *phonetic* as possible, consistent with *simplicity.* See page 266.

AGENCIES ON THE PACIFIC COAST FOR THE SALE OF THE CHARTS, COAST PILOTS, AND TIDE TABLES OF THE UNITED STATES COAST AND GEODETIC SURVEY.

LOS ANGELES, CALIFORNIA.
STOLL & THAYER, 3 South Spring street.

SANTA BARBARA, CALIFORNIA.
H. A. C. McPHAIL.

SAN FRANCISCO, CALIFORNIA.
BILLINGS, HARBOURNE & CO., No. 3 Montgomery st.
S. S. ARNHEIM, No. 8 Stuart street.

PORTLAND, OREGON.
J. K. GILL & CO., Nos. 28 and 30 First street.

PORT TOWNSEND, WASHINGTON TERRITORY.
D. C. H. ROTHSCHILD.

SEATTLE, WASHINGTON TERRITORY.
W. H. PUMPHREY, Mill street.

SITKA, ALASKA.

PACIFIC COAST PILOT.

THE INLAND WATERS OF THE COLUMBIAN ARCHIPELAGO.

THE GULF OF GEORGIA TO DIXON ENTRANCE.

In making the passage from the entrance of the Strait of Fuca to the waters of Alaska or to Sitka Harbor, it will for most purposes be sufficient to refer to other guides for the navigation of the intricate channels of the Strait and of the Gulf of Georgia.* From the head of that gulf a brief description of the usual route is here presented. This description comprises nearly all that is definitely needed by navigators bound northward.

From a point in mid-channel between the northwesternmost territory of the United States at Roberts Point and Saturna Island with Boundary Bluff, 180 feet high, bearing north five and one half miles, a course **W NW.** twenty-five miles may be laid to pass *Gabriola Reefs* bearing **S SW.**, at a distance of three and two-thirds miles. Thence **W. ¼ N.** forty miles carries to a point from which *The Sisters* rocks, ten feet high, bear **NE.** by **E.** one and three-quarter miles. This is well toward mid-channel, between Lasqueti and Hornby islands. Thence a course **NW.** by **W. ⅛ W.** forty miles, will bring the navigator to the entrance of Discovery Passage, and passes not nearer than one mile to any serious dangers.

It is hardly necessary to point out that the strong tides and eddies characteristic of this region render sailing directions based on long-distance courses of little value here, since the same cannot in many cases be made good except in fair weather and by a steam-vessel. But in practice only steam navigation is employed in these passages, and in most cases, by their pilots, courses and distances are alone made use of.

DISCOVERY PASSAGE

is the only known navigable outlet from the northwestern part of the Gulf of Georgia to the **NW.**, and lies between the western side of Valdes† Island and the northeastern shore of Vancouver Island. This passage averages a little more than a mile in breadth, contracting at Seymour Narrows to less than half a mile. Its shores southward from these narrows are moderately high and apparently fertile, but northward from them steep, rugged and mountainous. This passage was first entered by the United States sloop *Washington*, of Boston, Captain John Kendrick, in 1789. Its length in a **NW.** and **SE.** direction from Cape Mudge to Chatham Point is twenty-three and a half miles. The southern entrance to this passage is formed by **Willow Point**, a small and insignificant low rocky point covered with willows, with *a ledge* extending **NE.** from it three cables, which renders it inadvisable to approach the point within half a mile, and by Cape Mudge, which is the landmark for the entrance of the passage. This cape is a peculiar headland about two hundred and fifty feet high, flat and wooded on its summit, forming a rather abrupt yellow clay cliff,

Cape Mudge.

* Consult **Vancouver Island Pilot**, issued by the Hydrographic Office, Admiralty, London; and **Pacific Coast Pilot; Oregon and Washington Territory**, by the U. S. Coast and Geodetic Survey.

† Named for DON CAYETANO VALDÉS, who visited these waters in 1792, in the Spanish galiot *Mexicana*. Erroneously spelled *Valdez* on British Admiralty Chart No. 538.

more or less covered with vegetation. It falls to the westward toward Discovery Passage, forming a low boulder point; from the SE. the high land of Valdes Island appears behind it. It is situated (according to British Admiralty Chart No. 580) in

Latitude	50° 00′ N.
Longitude	125° 12′.5 W.

DANGERS.

From the low point referred to, a boulder beach extends to the eastward, following the general direction of the shore, and off this shore eastward from the low point, for two miles, the depth is not over five fathoms. This shoal is marked by kelp during the summer and generally by a tidal line or heavy ripplings, which should be avoided.

From Cape Mudge Willow Point bears S., a mile and two-thirds.

TIDES.

At the entrance, according to British authorities, it is H. W. F. and C. at 5^h 30^m, with a range of eleven feet. The current runs from four to six knots, turning at high and low water. In heavy weather the tide-rips at flood in the entrance are sufficiently heavy to be dangerous to small craft. The flood tide proceeds from the northwestward.

SAILING DIRECTIONS

FOR ENTERING DISCOVERY PASSAGE.

The western low part of Cape Mudge should not be brought to bear to the westward of **W NW** in entering or leaving this passage. The channel is free from dangers and presents no difficulties for steamers. Sailing vessels are recommended to enter it only in clear weather with a fair wind, and after the first rush of the flood is over. The course is **NW.** from a point in mid-channel **S SE.** from Cape Mudge about one mile. The soundings in the vicinity vary from twenty to forty fathoms, rocky bottom.

NW. by **W.** from Cape Mudge one mile is *a shoal patch* on which eight fathoms may be had, and over which the current forms strong tide-rips. **N NW.** from Cape Mudge less than two miles is a level piece of shore between the hills and the sea, where an Indian village is situated, off which fifteen fathoms may be had close in-shore, and immediately northward of this is a patch extending from the shore and carrying nine fathoms. The western shore of the passage is here moderately low. From the **Yakulta village** * westerly the shore of Valdes Island is about one hundred feet high, extending in a **W NW.** direction one mile to a rounded bluff point with a small rock close to it.

Directly behind this point to the northward is Kwathiaski Cove,† a small indentation bordered by a sandy beach. This cove is only fit for steamers or small craft, affording room for one vessel to moor in its northern part and for another in the southeastern part. The extreme length of the cove is two-thirds of a mile in a **NW.** and **SE.** direction, and its greatest width less than half a mile.

Kwathiaski Cove.

In the center of the cove is Grouse Island, small and moderately high with *a shoal* extending four hundred feet **SE.** from its **SE.** point, which should be guarded against in entering. The tide in the cove is slight but the stream runs strongly past the entrance, necessitating care in entering.

DIRECTIONS FOR THE USE OF KWATHIASKI COVE.

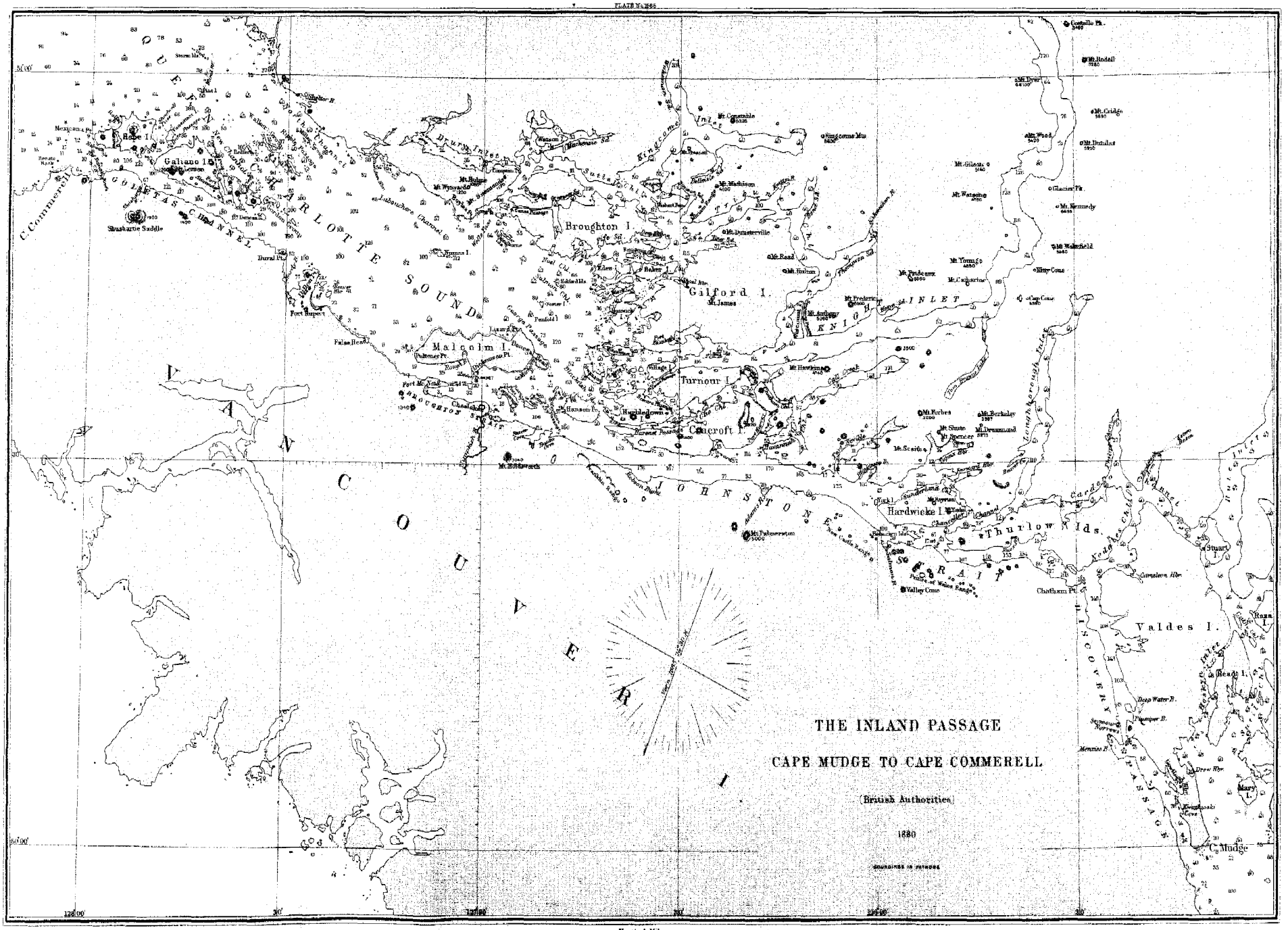
If intending to anchor in the cove it should be entered to the southward of Grouse Island, keeping an eye upon the tide, and the navigator should keep well over to the southern shore until inside, where the southeastern mooring ground is recommended, one or two cables **SE.** from Grouse Island, in ten fathoms, well sheltered from all winds, about midway between the **SE.** point of the island and the opposite shore. If necessary, a vessel may proceed to the northern part of the cove inside Grouse Island and anchor in seven to nine fathoms, but the southeastern mooring ground is recommended. *A shoal patch* exists in the middle of the northern entrance with three feet upon it.

A plan of this cove has been published by the British Admiralty Office in connection with that of Gowlland Harbor, No. 2067.

From Willow Point the Vancouver shore is low and bordered by a sandy beach. Five and a half miles **NW.** from Willow Point is the entrance of **Campbell River**, a large stream, navigable for some distance by boats or canoes. In this part of Discovery Passage the current turns near the shore

* Spelled **Yaculta** by British authorities.

† The name is spelled **Quathiaski** and **Quathiasky** by British authorities.


THE INLAND PASSAGE
CAPE MUDGE TO CAPE COMMERELL
British Authorities
1880
SOUNDINGS IN FATHOMS
Nautical Miles
QUEEN CHARLOTTE SOUND
VANCOUVER I.
Broughton I.
Gilford I.
Malcolm I.
Turnour I.
Cormorant I.
Hardwicke I.
Thurlow Ids.
Valdes I.
Read I.
Stuart I.
Rose I.
Galiano I.
Mexicana Pt.
Shushartie Saddle
Fort Rupert
Port McNeill
Alert Bay
Chatham Pt.
C. Mudge
C. Commerell
Johnstone Strait
Broughton Strait
Queen Charlotte Channel
Goletas Channel
Discovery Passage
Seymour Narrows
Knight Inlet
Kingcome Inlet
Drury Inlet
Nimmo Bay
Mt. Colnett
Mt. Robson
Mt. Wyndham
Mt. Stephens
Mt. Cornwallis
Mt. Madison
Mt. Dunsterville
Mt. Read
Mt. James
Mt. Anthony
Mt. Frederick
Mt. Hawkins
Mt. Holdsworth
Mt. Palmerston
Mt. Forbes
Mt. Berkeley
Mt. Drummond
Mt. Shute
Mt. Spencer
Mt. Scarlett
Mt. Rodell
Mt. Dyer
Mt. Gribbell
Mt. Wood
Mt. Dundas
Mt. Gibson
Mt. Waterhouse
Mt. Kennedy
Mt. Wadenfield
Mt. Yorke
Mt. Catherine
Glacier Pk.
Castillo Pk.
Mt. Frederick
Mt. Prideaux
Mt. Fulton
Mt. Ashdown
Mt. Pendrell
Mt. Duncan
Mt. Stephens
Mt. Wyndham
Mt. Colnett
Mt. Robson
Mt. Cornwallis
Mt. Madison
Mt. Dunsterville
Mt. Read
Mt. James
Mt. Anthony
Mt. Frederick
Mt. Hawkins
Mt. Holdsworth
Mt. Palmerston
Mt. Forbes
Mt. Berkeley
Mt. Drummond
Mt. Shute
Mt. Spencer
Mt. Scarlett
Mt. Rodell
Mt. Dyer
Mt. Gribbell
Mt. Wood
Mt. Dundas
Mt. Gibson
Mt. Waterhouse
Mt. Kennedy
Mt. Wadenfield
Mt. Yorke
Mt. Catherine
Glacier Pk.
Castillo Pk.
Johnstone Strait
Broughton Strait
Queen Charlotte Channel
Goletas Channel
Discovery Passage
Seymour Narrows
Knight Inlet
Kingcome Inlet
Drury Inlet
Nimmo Bay
Chatham Pt.
C. Mudge
C. Commerell
Valdes I.
Read I.
Stuart I.
Rose I.
Galiano I.
Mexicana Pt.
Shushartie Saddle
Fort Rupert
Port McNeill
Alert Bay
Hardwicke I.
Thurlow Ids.
Cormorant I.
Turnour I.
Malcolm I.
Gilford I.
Broughton I.
VANCOUVER I.
QUEEN CHARLOTTE SOUND
JOHNSTONE STRAIT
BROUGHTON STRAIT
GOLETAS CHANNEL
DISCOVERY PASSAGE
SEYMOUR NARROWS
KNIGHT INLET
KINGCOME INLET
DRURY INLET
NIMMO BAY
Nautical Miles

with the tides, running from the northwestward with the flood. One and a half miles NW. from this river is **Orange Point**, bare and round, of a reddish color, forming the eastern extreme of Duncan Bay, an indentation in the shore about two cables in extent N NW. and S SE. and five or six cables W SW. and E NE.; easy of access, well out of the tide, sheltered from all winds except those from W NW. round by N. to E SE. and affording good anchorage in seven to fourteen fathoms, sand, about five cables W. ½ S. from Orange Point. This is the best anchorage between Seymour Narrows and Cape Mudge. A stream of water enters at its head, where there is a broad sandy beach. A boulder spit of triangular shape extends a cable and a half NW. by N. from Orange Point, its outer limits marked by kelp in four fathoms. This bay is shown on the British Admiralty Charts 538 and 2067, in connection respectively with Seymour Narrows and Gowlland Harbor. **Duncan Bay.**

Gowlland Harbor is the next shelter on the southwestern shore of Valdes Island, NW. from Kwathiaski Cove. From the northern entrance of the latter the shore is bold-to and very irregular, extending in a general NW. direction two miles to the northern end of **Steep Island**, which forms the southern head of the entrance to Gowlland Harbor. This island is less than half a mile long, very narrow, with a bluff shore on the western side, and about one hundred feet high. Its northwestern end is directly abreast of Orange Point and bears from it NE. ½ N., distant one mile. Between it and Gowlland Island, forming the southern protection of the harbor, is a narrow rocky channel. The last-named island is about a mile long and a third of a two summits, of which the southeastern one is about four hundred feet high. A rock connected by a mile wide, with rocky tongue with the northwestern end of Gowlland Island is known as **Vigilant Point**, and is stated to be in **Gowlland Harbor.**

Latitude	**50° 5′ 02″ N.**
Longitude	**125° 16′ 06″ W.***

The variation of the compass in this vicinity was **23° 35′ E.** in 1866, with a presumed annual increase of 2′.

The harbor lying within this point is two and a half miles in a NW. and SE. direction, and from a quarter to two-thirds of a mile in width. There are several rocks and islets within it, and the shores are mostly wooded, rugged and irregular. From Vigilant Point to some islets near shore, forming the northwestern head of the entrance, is a little less than half a mile W NW. Across the inner portion of the entrance, extending to within a cable's length of the islets before mentioned and of Vigilant Point, lies the *Entrance Bank*, composed of sand, partly dry at low water, and being about four cables long in a W NW. and E SE. direction, and one and a half cables wide. There is a clear passage on each side of it with not less than four fathoms; its southern end, with three fathoms on it, lies a cable N. by W. from Vigilant Point. ***Entrance Bank.***

SAILING DIRECTIONS

FOR ENTERING GOWLLAND HARBOR.

I. ***From the Southward.***—Steep Island should be rounded at about a cable's distance, when the course is NE. by E. for the passage north of Vigilant Point, which is nearly steep-to and should be rounded at half a cable's length, or less, to avoid Entrance Bank. When Vigilant Point bears W. by S. a quarter of a mile, anchorage may be had in seven fathoms, muddy bottom. More extended anchorage may be found with deeper water at the southeastern head of the harbor, but the passage between the southeastern end of Gowlland Island and Valdes Island is obstructed by rocks and shoals. A contracted anchorage is also at the northwestern end of the harbor, N NW. of the Entrance Bank, in four fathoms. The first-mentioned anchorage is recommended for navigators intending only a short stay.

II. ***From the Northward.***—If coming from the northward, the course is E. for Vigilant Point, passing as before directed.

A plan of this harbor is issued by the British Admiralty Office, No. 2067.

TIDES.

It is H. W. F. and C. at $5^h\ 30^m$ p. m. Spring tides rise eleven feet.

The coast from Gowlland Harbor, in a W NW. direction, is bold-to, high and rugged for four miles. On the Vancouver side, from Duncan Bay, the bluffs are lower, and the shore trends about NW. for nearly three miles, with a narrow beach to **Race Point**, a high bluff promontory, bold-to; past which the tide runs with a four to six-knot current, the flood forming rips very dangerous for boats.

*All longitudes given in this work are *West* from *Greenwich*.

From this point the land trends **W SW.** two miles to the mouth of Menzies Bay, an indentation in the Vancouver shore of considerable extent, being a mile and a half long in a **NW.** and **SE.** direction, and three-quarters of a mile wide. The head of the bay is somewhat shoal, with a broad bank at low water, and the middle of the bay just within the entrance is obstructed by a large triangular sand bank, partly dry at low water, with a clear passage on each side of it about a cable and a half in width.

Menzies Bay.

SAILING DIRECTIONS

FOR ENTERING MENZIES BAY.

To reach the anchorage the navigator should keep within a cable's length of the eastern shore for half a mile, when the vessel may be kept off for the center of the bay, where anchorage may be had in six fathoms, muddy bottom, half a mile from the head of the bay, and two cables **S SW.** from the eastern shore. The latter is high and rugged, the western shore low; both are steep, and an extensive valley runs northwestward from the head of the bay. A less direct and narrower passage exists along the southwestern shore which may also be used, as above, and is by some preferred on account of strong eddies which exist off the eastern headland of the bay and especially if coming from southward.

With a southward running tide a strong eddy sweeps into Menzies Bay north from Race Point,* but the head of the bay is still. At the anchorage, Wilfred Point† bearing **E.** by **S.** $\frac{3}{4}$ **S.**, the north end of the beach bears **NW.** $\frac{3}{4}$ **W.** and the south end **W.** by **S.** $\frac{3}{4}$ **S.**

Wilfred Point, the eastern headland of Menzies Bay, is over three hundred feet high, bluff and rocky. **E NE.** from it half a mile is **Maud Island**,‡ three hundred feet high, less than half a mile in diameter, rounded, with a boat passage between it and Valdes Island to the northward. A small islet called Yellow Islet lies three cables **E NE.** from Maud Island. Between the latter and Wilfred Point is the southern entrance to

SEYMOUR NARROWS,

which extend **N NW.** from the entrance two miles, being less than four cables in width at their narrowest part. The shores on both sides are rugged, high and bold-to. The summits on the Valdes shore rise to the height of seven hundred feet and those on the Vancouver side have the appearance of being decidedly higher. The depth of water in some parts of the Narrows exceeds sixty-five fathoms.

TIDES.

Owing to the narrowness of this gorge the tides rush through with great velocity, attaining fully nine knots at spring tides. It is stated that the flood and ebb streams run for nearly equal intervals of six hours,—a very short period of slack water intervening between them. It should be noted that the flood stream runs in on the surface some time before the water commences to rise, so that with an hour's apparent flood the depth of water in the passage may not be appreciably greater than at low water. According to English authorities it is **H. W. F.** and **C.** at $4^h\ 0^m$, the stream running one and a half hours after high and low water, with a spring rise of thirteen feet.

Deceptive flood-tide.

DANGERS.

According to the British Admiralty Charts, on a line connecting the summits of Maud Island and Wilfred Point lies *Ripple Rock*, a submerged channel rock having three fathoms on it at lowest water. This rock is situated rather less than two cables from the Vancouver shore and nearly three cables from the western shore of Maud Island. It is in one with the outer edge of Race Point bearing **E.** by **S.** $\frac{1}{2}$ **S.**; with the southern edge of Maud Island bearing **E.**; with the southeast edge of Wilfred Point bearing **SW.** by **S.** $\frac{1}{2}$ **S.**; and with the western end of Separation Head bearing **N NW.** The U. S. S. *Saranac* was lost on this rock in June, 1875. **N.** one cable from this rock is *another small patch* with four fathoms on it. Around these rocks the water varies from twelve to forty fathoms in depth.

Ripple Rock.

When the tide is running strong Ripple Rock is plainly marked by the whirl of water over it. Between the eastern end of Maud Island and the adjacent shore is an appearance of a passage though none exists; the place is often called False Passage. Race Point is rocky, flattish and bare of trees.

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* Cape Race of Meade, U. S. Hydrographic Office Hydrographic Notice No. 13, 1869.

† Wilford Point of Meade.

‡ Erroneously spelled Maude on British Admiralty Chart No. 580. **Maude Island** is near Nanoose Harbor.

SEYMOUR NARROWS

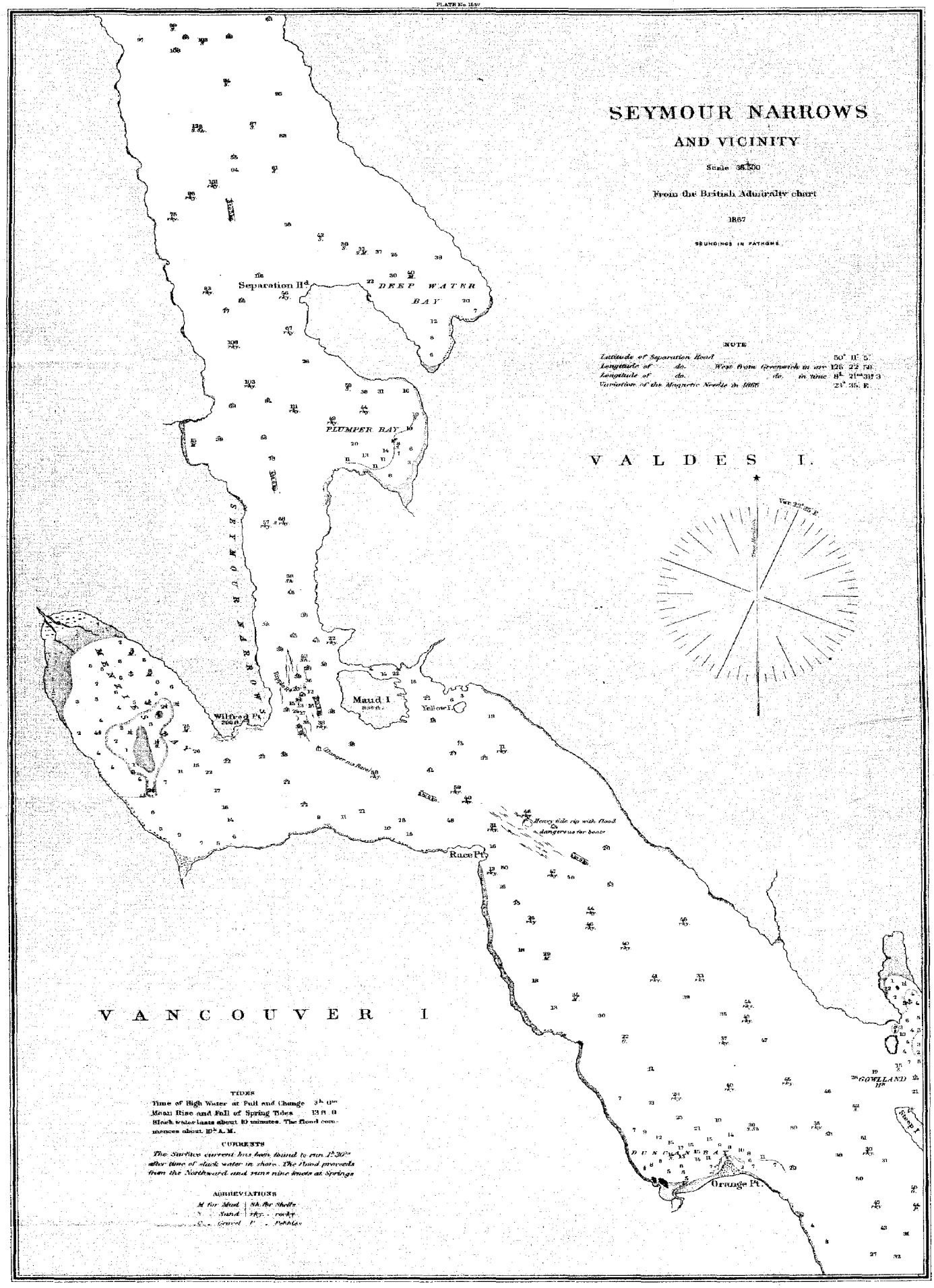
AND VICINITY

Scale 36720

From the British Admiralty chart

1867

SOUNDINGS IN FATHOMS



NOTE

Latitude of Separation Head		50° 11′ 5″
Longitude of do.	West From Greenwich in arc	125° 22′ 30″
Longitude of do.	do. in time	8h 21m 31s 3
Variation of the Magnetic Needle in 1866		24° 35′ E.

TIDES

Time of High Water at Full and Change 3h 0m
Mean Rise and Fall of Spring Tides 13 ft 0
Stack water lasts about 10 minutes. The flood commences about 10h A. M.

CURRENTS

The Surface current has been found to run 1h 30m after time of slack water in shore. The flood proceeds from the Northward and runs nine knots at Springs

ABBREVIATIONS

M for Mud		Sh. for Shells	
S. . Sand		rky. . rocky	
G. . Gravel		P. . Pebbles	

GENERAL DIRECTIONS

FOR DISCOVERY PASSAGE AND SEYMOUR NARROWS.

In proceeding through Discovery Passage from the Southward. if the tide be favorable, a vessel has only to keep in mid-channel until up with the Narrows. If the tide be unfavorable, after passing Cape Mudge it is desirable to keep two or three cables off the Valdes Island shore, which is bold-to and where the tide does not run so strongly. Sailing vessels, except small craft, should not attempt to beat through southward of the Narrows.

In attempting to pass the Narrows it is recommended to choose the earlier or latter part, if a favorable tide, as during the time of greatest strength a boiling race, with whirls and overfalls, extends clear across, rendering steerage-way very difficult to obtain. The latter part of a head tide is perhaps the most favorable time. In passing through when abreast of Maud Island the navigator should keep a cable to the eastward of mid-channel to avoid the rocks; over which, however, vessels drawing less than thirteen feet may pass freely.

To the northward of the Narrows, the tides being comparatively weak, a vessel may proceed either in mid-channel or close inshore (except off Chatham Point) in safety.

At the northern entrance of the Narrows the passage is three-quarters of a mile broad, but immediately expands to nearly twice that width, forming on the Vancouver side a small bight with a sandy beach, and on the opposite shore Plumper Bay, named after H. B. M. steamer *Plumper*, long engaged in surveying in this region. This bay is about half a mile wide and less than a mile long in a **N NW.** and **S SE.** direction, and is sheltered to the **NW.** by Separation Head, an oval high peninsula putting out from Valdes Island. It is easy of access, and well sheltered. In its southeastern part anchorage may be had in seven to twelve fathoms within two cables' length of the shore. The eddies and tides in this bay are said to be very strong and cause a vessel to surge heavily on her chains. For this reason it is chiefly useful to remain in for a short time while awaiting a favorable tide at the Narrows. No directions are necessary for entering it. **Plumper Bay.**

Separated from Plumper Bay by the peninsula of Separation Head is **Deep Water Bay,** about a mile long and over half a mile wide, but too deep for convenient anchorage. From Separation Head Discovery Passage trends **NW.** for five miles, the shores becoming more high and rugged than before. At this point a deep bay, with a number of islets in it but no anchorage, is reported, indenting the eastern shore, and a mile to the northward is another smaller and narrower, not yet fully explored. These bays are reported to extend much farther than the most recent charts indicate.

Between these is **Granite Point,** rather low, wooded on top, bare at the end, highest toward the northern inlet, from which **NW.** at two cables distance is *a submerged rock* having only nine feet of water on it. The western shore **NW.** from the Narrows is nearly straight, and at six miles **NW.** from Separation Head forms a rather low sloping point, known as **Otter Point,** having a gravel beach off it with a fringe of kelp about it. Westward from this point the shore forms a slight indentation three-quarters of a mile deep, called **Elk Bay,** affording indifferent anchorage, exposed to northerly winds, in fourteen fathoms about a third of a mile from its head. Three-quarters of a mile **NW.** of the northern headland of this bay, in a slight indentation of the shore, lies *a rock*, covered at half-tide, at a distance of a cable and a half from the beach. Northward from this bay the shores are high and rugged, with numerous inshore rocks marked by kelp. The mountains on the Valdes Island side rise to the height of 2,200 feet. ***Submerged Rock.***

NW., three and a half miles from Otter Point, lies Otter Cove, about four cables in extent, on the western side of the passage and just south of Chatham Point. It is a small but snug anchorage, sheltered from most winds by Limestone or Lewis Island, a small islet one hundred feet high, nearly in the middle of the entrance. About a cable **E NE.** from this islet lies *Snag Rock*, with two feet of water upon it. **Otter Cove.**

DIRECTIONS FOR THE USE OF OTTER COVE.

Intending to anchor in this cove, a vessel should pass in mid-channel on the northern side of Limestone Island and anchor midway between it and the head of the cove in six to ten fathoms, sand. The bottom is chiefly rocky in the entrance, but with not less than sixteen fathoms in the channel. There is a narrow four-fathom passage bordered by shoals on the southern side of the islet. Large vessels must moor.

A plan of Otter Cove is added to the last edition of British Admiralty Chart No. 580.

Directly north of this cove is Chatham Point, nearly twenty-four miles from Cape Mudge, and forming the northwestern headland of Discovery Passage. It is a low rocky point, fringed with rocks which extend to the eastward and northward a quarter of a mile. **Chatham Point.**

Two cables **NE.** from its northern extreme is *Beaver Rock*, awash at low water, from which rocks extend in a scattered way three cables farther **NE.** In rounding Chatham Point it should not be approached within three-quarters of a mile. The entrance to Discovery Passage is here a mile and a quarter wide. An islet lies west of and close to its eastern headland.

The point on Valdes Island opposite Chatham Point has a nearly bare steep rocky face not much higher than Chatham Point. The north shore here is more or less rocky for some distance inland from the beach.

TIDES.

The tides in this vicinity run from two to five knots, and opposite Chatham Point, between it and the entrance to Nodales Channel, are several strong tide-rips.

Pilots all concur that the tides here are very irregular, and that the data on the Admiralty Charts are insufficient to compute the time or intervals of high water.

NODALES CHANNEL

and Johnstone Strait intersect Discovery Passage at right angles. Four miles to the eastward, in the channel, is an indentation of the Valdes Island shore, forming an anchorage known as **Cameleon Harbor.**

JOHNSTONE STRAIT,

which separates the northern side of Vancouver Island from the Thurlow and other islands and the mainland, is comprised between Chatham Point and Ella Point, Vancouver Island,—being about fifty-five miles in length in a **W.** by **S.** and **E.** by **N.** direction, and having a width of from one to two miles. The shore on both sides is high and rugged, especially to the southward, where an almost continuous range of mountains rises abruptly from the sea with summits 2,000 to 5,000 feet in height, some of which bear snow throughout the year. The shores of the strait, except in a few places to be hereafter referred to, are bold-to, and there are no anchorages whatever along the southern shore.

This strait is represented on British Admiralty Charts Nos. 580, corrected to September, 1880, and 581, corrected to August, 1872.

TIDES.

The tides attain a strength of six knots in a few places, but on an average do not exceed three knots. It is stated by English authorities that everywhere in Johnstone Strait it is **H. W. F. and C.** at 0^h 35^m, and the rise and fall of tide is about sixteen feet. The streams run by the shore from two to two and a half hours after high and low water, and, except near Helmcken Island and to the eastward of Knox Bay, they seldom exceed one to three knots per hour.

The magnetic variation in 1862 was **23° 40′ E.**, with a presumed annual increase of 2′.

From Chatham Point to the west end of Thurlow Islands the soundings in mid-channel are very deep,—in several places no bottom being found with 150 fathoms of line. Hence to Hardwicke Island the bottom is irregular, and beyond it again deepens. There are *heavy tide-rips* near Helmcken Island, and just west of Chatham Point is an *overfall* which at times produces a considerable swell. North from Chatham Point the northern shore of the strait is formed by the Thurlow Islands, extending westward from Nodales Channel, and formerly supposed to consist of but one island. Though still not entirely surveyed, there are reasons for believing that the land is divided into at least two islands by narrow passages yet unexplored. The Vancouver shore bordering on Johnstone Strait is rocky and irregular, and extends some fourteen miles in a westerly direction from the entrance of the strait.

Thurlow Islands.

W. by **N.** three and a half miles from Chatham Point lie the **Pender Islands,** rugged and barren, one hundred and fifty feet in height, through the passages between which the tide sets strongly. *Foul ground* exists to the east and west of them for nearly half a mile, and their south side should not be approached within two cables length.

Mount Eldon, **N NE.** from the Pender Islands, is a peculiar wooded, square-topped hill, abrupt to the **NW.** and quite isolated. On this part of Johnstone Strait the Vancouver shore is the steeper, higher, and more densely wooded of the two. Six miles to the westward from Chatham Point, on the Vancouver shore, is **Ripple Point,** off which are *heavy tide-rips* in blowing weather. It is bold-to, and directly abreast of it is an unexplored opening in the Thurlow shore.

On the northern shore of the strait, seven miles **W. ¼ N.** from Chatham Point, is Knox Bay, two-thirds of a mile deep in a northwesterly direction and having about the same width. It affords anchorage in fifteen to seventeen fathoms two cables from its head, on the edge of a bank which is steep-to. This anchorage is open to southerly though protected from other winds. The bluff **E NE.** from it is nearly bald on its **SE.** slope.

Knox Bay.

DIRECTIONS FOR USING KNOX BAY.

If intending to anchor in the bay the head of the bay should be steered for and the lead kept going; directly sixteen fathoms are had the anchor should be let go. It is recommended that this bay be used only as a temporary anchorage, as should a southerly wind spring up the vessel would ground from the steepness of the bank.

Off the **SW.** point of the bay *foul ground* extends for a cable length from the shore and follows the course of the point for half a mile. Beyond Knox Bay the Thurlow shore is almost straight, extending in a **W SW.** direction for nearly six miles, when it turns to the northwest, where a small bay exists too deep to afford anchorage except for small craft at its head, and open to the westward.

To the north from it is **Eden Point**, the northwestern extreme of Thurlow, bold and cliffy, forming the southern headland of the entrance to Chancellor Channel.

On the line from Eden Point, Thurlow Island, to Camp Point peak, close to the Vancouver shore, lies *a rock* covered at high water, (not on the British Admiralty charts,) which was discovered by Captain Carroll of the steamer *California* in May, 1880.

Westward from Eden Point Johnstone Strait becomes wider, and so continues except where obstructed by islands. Its width at this point is nearly two miles. On the Vancouver shore, nine and three-quarter miles **W.** by **S.** ½ **S.** from Ripple Point, is **Camp Point**, sloping gradually to the sea, with a rocky beach off it; and from the point **NE.** half a mile lies *Ripple Shoal*, about half a mile in length from **E.** to **W.**, marked by kelp and having six to nine fathoms upon it, with deep water all around the shoal.

The north side of the strait in this vicinity is formed by **Hardwicke Island**, separated from the Thurlows by Chancellor Channel, and having its southern shore nearly straight for seven miles. East from *Earl Ledge* the shore is steep-to. **W SW.** from Eden Point two and a half miles lies Helmcken Island, in the middle of the strait, a mile and a half long in an **E.** and **W.** direction, and about half a mile wide, with a rugged and irregular coast line. **Helmcken Island.** It rises to the height of nearly two hundred feet, and has several small islets close-to on its northeast shore. On each side of the island is a clear passage half a mile wide. In the track of vessels using the northern passage lies *Speaker Rock*, which covers at less than half tide, and is situated two and a half cables **NE.** from the eastern point of the island. ***Speaker Rock.***

The northern channel is known as **Current Passage**, and has deep water with about the same tide as **Race Passage**, which is more generally used, deep and clear of danger. The tide runs strongly through it, as much as seven knots at spring tides, and there are some *heavy tide-rips* in the eastern part.

Westward from Camp Point the Vancouver shore is almost straight for nearly four and a half miles. It then forms a slight indentation known as **Salmon Bay**, with extensive flats at its head, giving it an appearance of considerable extent at high water; but there is *no anchorage*,—the bank at its head being bold-to. A large river, said to be navigable for several miles by canoes, empties into the bay from an extensive valley which stretches away to the southeast, in the centre of which appears **Valley Cone**, a remarkable bare peak about eight hundred feet high. This valley forms the only break in the mountain range of the Vancouver shore.

On the shore of Hardwicke Island, one mile west of the western point of Helmcken Island, is a small rocky point, directly to the eastward of which the *Earl Ledge* extends at right angles to the shore for about three cables, only uncovering at low water. ***Earl Ledge.***

Hence to the western end of Hardwicke Island both shores of the strait are rugged, broken and nearly straight, and its width is slightly contracted. Off the western end of Hardwicke are **York Island**, high, round, and half a mile in diameter, and another low islet half a mile farther west. Off these, **W NW.** from the outer islet a quarter of a mile, lies the *Fanny Reef*, awash at high water.

The entrance of Sunderland Channel between the reef and the north shore of the strait is subject to *heavy tide-rips*. The north shore is now constituted by the mainland of British Columbia and much indented by bays and inlets. Somewhat less than two miles **NW.** from York Island is Tuna Point, the southeast headland of **Blinkinsop Bay**, over a mile deep and half a mile wide, with extensive tidal flats at its head. The shores are high and the bay affords good anchorage, well sheltered and easy of access, in ten to twelve fathoms about one-third of a mile **NE.** from its southwest point. The bank on which anchorage may be had is rather steep, and the only direction necessary is to anchor in mid-channel as soon as twelve fathoms are obtained. Half a mile **SW.** from the bay is Jesse Island, lying about two cables off shore, small and steep-to.

About two miles **W.** of this island is the entrance to Port Neville,* an inlet some seven miles in length, having a generally **NE.** direction, and being from a mile to a quarter of a mile in width. Its shores are high except near the eastern part of the entrance and at its head. It affords spacious and secure anchorage when once inside; but the entrance, where less than four cables wide, is obstructed by *Channel Rock*, a little over a mile from the entrance, of small extent and very dangerous, having only four feet of water over it, with twelve feet in the channel to the eastward of it and seventeen feet to the westward. **Port Neville.** ***Channel Rock.***

A detailed description of this port is unnecessary. Port Harvey and Blinkinsop Bay, both secure and easy of access, are adjacent to it, and the danger in entering Port Neville is so great that it renders it inadvisable to seek shelter there in preference. If necessary, a vessel may anchor in the entrance half a mile north of **Milly Island**, in four or five fathoms. This island is quite small and separated by a very narrow channel from the western headland of Port Neville entrance. A plan of this port appears on British Admiralty Chart No. 630.

*Named by Vancouver in July, 1792.

The coast of the mainland hence **W.** by **S.** is irregularly formed with small indentations to the Broken Islands. **W.** by **S.** ¼ **S.** four miles from the entrance to Port Neville is the *Slimpson Reef*, a ledge of rocks a quarter of a mile off shore, covering at half-tide and marked by kelp in summer. **SW.** by **S.** three miles from this reef is Adams River, on the Vancouver shore, a small stream with extensive flats filling a small indentation in the coast, behind which rise high mountains, one peak attaining the height of five thousand feet. Nearly abreast of this indentation, on the northern shore, are the **Broken Islands**, lying off a point of the mainland, with a boat passage between them and the shore, at the entrance to Port Harvey and Havannah Channel. They are small, rugged and low, and may be approached within a quarter of a mile to the south and southwest, but to the northward rocks, ledges and kelp, indicating shoals, extend three-quarters of a mile.

Slimpson Reef.

One and a third miles to the northward of these islands is the entrance to Havannah Channel, which runs in a northeasterly direction for four miles, connecting the eastern part of the entrance to Port Harvey with Call Creek Inlet. From Domville Point, the south headland of the channel, **N NW.** about one mile, lies the inner entrance to **Port Harvey**, which is here about half a mile wide and extends for two miles to the northward. There are several islets within it; the shores are rugged; from its head swampy ground extends northeastward, and a narrow gorge to the northwest partly fills at high water and joins Knight Inlet. The soundings at the entrance vary from sixty to eighty fathoms, shoaling rapidly toward the head. Taking in the outer entrance the port is about four miles long, varying from a quarter to three-quarters of a mile in width, and affords good and well-sheltered anchorage half a mile from its head in seven to nine fathoms, muddy bottom.

Havannah Channel.

It is **H. W. F.** and **C.** at Port Harvey at $0^h\ 30^m$, and the tide ranges about ten feet.

The small islets in Port Harvey are known as the Mist Islands.

SAILING DIRECTIONS

FOR ENTERING PORT HARVEY.

If intending to anchor in Port Harvey, the navigator should keep in mid-channel till within the Mist Islands, when the anchorage opens out, and a berth may be had in seven fathoms about half a mile from the head of the port.

Sailing vessels of considerable size may beat in as far as the Mist Islands, standing in to a cable length from the western shore, but on the other tack should avoid standing to the eastward of the line of the Broken Islands or into the bight between the inner eastern headland (Transit Point) and the Mist Islands.

A plan of this port appears on British Admiralty Chart No. 634.

DANGERS.

Two miles **W SW.** from the Broken Islands lies the *Escape Reef*, half a mile off the north coast of Johnstone Strait, with deep water between it and the shore. It is about a cable in extent, with least water four feet, and in summer is marked by kelp. It has deep water about it, and is a danger in the track of vessels bound into Port Harvey from the westward and into Forward Bay from the eastward. To avoid it in the first case the navigator should keep a mile off shore until the entrance of Port Harvey bears **N.** by **E.**, when that course carries clear of all dangers.

Four miles **W SW.** of the Broken Islands lies Forward Bay, a mile and a quarter broad and three-quarters of a mile deep, with Bush Islet, a small islet thirty feet high, off its southwestern point, which is surrounded by a bank, and at its head are flats nearly three cables wide. This bay affords good anchorage, well sheltered from all winds except southeasters, and even these are said to send in no swell; it is easy of access for vessels of any class, and may be recommended as a good stopping place.

SAILING DIRECTIONS

FOR ENTERING FORWARD BAY.

I. ***From the Eastward.***—Vessels should keep in mid-channel to avoid the *Escape Reef* until Green Islet, on the eastern side of the bay, bears **NW.**, when the course is **W NW.** for the middle of the bay, anchoring off the bank at its head in ten to fourteen fathoms, two-thirds of a mile **NE.** from the **SW.** point of the bay.

II. ***From the Westward.***—Vessels should not approach the northern shore within half a mile until the head of the bay opens out past Bush Islet, off the southwestern headland; when a course may be laid for the anchorage.

From this bay westward the northern shore of the strait—here formed by the southern shore of Cracroft Island, according to the later charts—becomes comparatively low, trending W. by S. for fifteen miles to the termination of the strait.

Boat Harbor, a small cove, affording shelter for boats, is six miles W SW. from Forward Bay,—the shore between them being bold-to for the most part, and may be approached to a quarter of a mile. Two and a half miles S. from Boat Harbor is an indentation of the Vancouver shore called Robson Bight. Beyond Boat Harbor, about three miles to the westward, are the **Sophia Islands**, of small extent, a quarter of a mile from the shore.

Cracroft Island extends from Chatham Channel, east of Port Harvey, westward to Blackney Passage, some nineteen miles in a NE. by E. ½ E. and SW. by W. ½ W. direction; though previously the name was applied to a much more contracted portion of this land. **Cracroft Island.** It is separated by Blackney Passage, a strait a mile wide, from **Hanson Island**, about one hundred feet high, with rocky shores, extending hence to the westward three miles. Off the western end of Hanson Island are a large number of islets and rocks extending off its southwestern point nearly half a mile. Abreast of this point are some *tide-rips*, and on the Vancouver shore is a small low islet called Blinkhorn Island, on which the timber has been prostrated by a violent wind squall.

A mile and a quarter west from this is **Ella Point**, the southwestern headland of Johnstone Strait, with some rocks extending a quarter of a mile northward from it. There is a slight indentation, known as Bauza Cove, to the eastward of the point, with water too deep to afford anchorage.

At its western termination Johnstone Strait is a mile and a half wide, clear of obstructions, and hereabouts the tide runs from three to five knots.

JOURNAL DIRECTIONS FOR THE NAVIGATION OF JOHNSTONE STRAIT.

For a steamer, or a sailing vessel with a fair wind, the navigation of the strait presents few difficulties. It is only requisite to keep in mid-channel with the following exceptions: When past Thurlow Islands, going to the westward, vessels nearing Helmcken Island should keep within three cables' length of the southern shore until past the Ripple Shoal. The tides are strong near Helmcken Island, but not so much so as to interfere with the progress of a steam-vessel of moderate power; to the westward they have no great strength. In beating through the strait from the eastward the shores to the eastward of Helmcken Island may be approached to one cable length, except for half a mile on either side of the Pender Islands, the southern shore of which should not be approached within two cables, as the tide runs strong in their vicinity. Between Thurlow Islands and the western end of Hardwicke Island it is not advisable to beat, as there are several dangers, previously specified, and the tide runs strongly and irregularly. From Hardwicke Island to the western end of the strait the southern shore may be approached to one cable, and the northern, except near the Slimpson and Escape Reefs, to two or three cables.

BROUGHTON STRAIT,

connecting Johnstone Strait and Queen Charlotte Sound, is about fifteen miles in length east and west, the breadth varying from four miles near the eastern entrance to one mile near the western entrance. Its southern shore is formed by Vancouver Island and its northern shore by Malcolm Island—both, except near Beaver Cove, being moderately low. The eastern part is somewhat obstructed by islands, rocks and shoals, but a clear navigable channel exists, half a mile wide at its narrowest part, along the southern shore. At the eastern entrance of the strait the depths vary from sixty to one hundred fathoms, decreasing rapidly to the westward; abreast the Nimpkish River nineteen to twenty fathoms may be had; but the bottom westward from this becomes irregular with soundings in from fifteen to forty fathoms.

TIDES.

In Broughton Strait it is **H. W. F. and C.** at $0^h\ 30^m$,—the tide ranging fourteen to fifteen feet. In the navigable channel the streams run from one to four knots, in the Race and Weynton passages from three to six knots, turning everywhere about two hours after high and low water by the shore.

Beaver Cove, at the entrance of Broughton Strait, on the Vancouver shore, is a two-headed indentation of the coast, extending inland southward and westward over a mile, and half a mile in width. Its shores are high and bold-to except near the southern and western extremes. The water is too deep for convenient anchorage except within two cables length of the western head, where anchorage may be had in from ten to fifteen fathoms, well sheltered from all winds, unless it be squalls from the high land. Spring tides here rise fifteen feet. The northwestern headland of the cove is high and bold-to. It is known as **Lewis Point**, and is stated to be in

Latitude ..... 50° 32′ 47″ N.
Longitude ..... 126° 52′ 12″ W.

A plan of this cove is to be found on British Admiralty Chart No. 2067.

Three miles to the southwest from the cove, **Mount Holdsworth**, a remarkable conical peak, rises to the height of three thousand feet. For nearly seven miles to westward from the western point of Hanson Island the navigable part of the strait is sheltered to the northward by the **Pearse Islands**, by other islets, and by **Cormorant Island**. The latter rises to the height of three hundred and fifty feet, is two and a half miles long east and west, three-quarters of a mile wide, and bordered by a sandy beach. Two and a half miles **W.** by **N.** from Beaver Cove is its eastern extreme, known as Gordon Point.

Between Hanson, Pearse and Cormorant islands lie the narrow and dangerous **Weynton** and **Race** passages, through which the tides rush with great velocity. Abreast of Beaver Cove are some *tide-rips* in the middle of the passage. Abreast Cormorant Island and five miles **W.** by **S.** of Lewis Point, on the Vancouver shore, is the mouth of the Nimpkish River, which flows into a shallow bay off which are tidal flats extending nearly a mile. A narrow winding channel, carrying about five feet of water, extends into the river, which is only navigable for any distance by canoes.

Nimpkish River.

At the mouth it is **H. W. F.** and **C.** at 0^h 30^m, with a spring rise of fourteen feet.

Some six miles up the river, which passes through a broad valley bounded by mountains fifteen hundred to three thousand feet in height, is **Lake Karmutsen**, a large sheet of water, into which several large streams fall, and to the south of which the mountains rise over five thousand feet. On the northern bank of the river, at its entrance, is the ruined native village of Cheslakee.*

About a mile **NE.** ½ **N.** from the entrance of the river is **Green Islet**, stated to be four feet above high water, small and bare, and situated in

Latitude ..... 50° 34′ 12″ **N.**
Longitude ..... 126° 58′ 37″ **W.**

In navigating the strait Green Islet should not be approached within three cables. Half a mile west of it, on the bank, is *a rock* which uncovers at low water. This rock is not shown on the plan of Nimpkish River on British Admiralty Chart No. 2067.

The magnetic variation in this vicinity was **23° 55′ E.** in 1862.

In this part of Broughton Strait a current of one to three knots is reported running for two hours after high and low water by the shore, flooding to the eastward.

Directly abreast of Green Islet is **Alert Bay**, on the southern shore of Cormorant Island. **Yellow Bluff**, forming the southwestern headland of the bay, is recognized by a noticeable yellow cliff at the extreme of the point. The bay is half a mile deep **N.** and **S.** and nearly a mile wide, easy of access, and affording good and well-sheltered anchorage in five to nine fathoms, muddy bottom, the shores being everywhere free of dangers. No directions are necessary for entering it. A plan of this bay may be found on British Admiralty Chart No. 2067. Wood and water are abundant here. There is a large salmon cannery, and a wharf at which vessels can lay at any time of tide. There is a mission established here, and quite a large Indian village, comprising most of the former inhabitants of Cheslakee. The house marked on British Admiralty Chart No. 2067 is a small one-story house with three windows toward the water. Near it is a very small chapel.

Alert Bay.

The northwestern angle of Cormorant Island is known as Leonard Point, from which **W.** by **S.** a mile and a quarter is a *kelp patch* in four fathoms. Two and a half miles nearly **W SW.** is **Haddington Island**, small and steep-to, except on its northern side, where *a bar* extends toward Malcolm Island across the strait with as little as six feet on it in some places. Between this island and the ledge running eastward from the northern headland of Port McNeill is a clear passage, three-quarters of a mile wide, carrying seven fathoms in mid-channel. **W SW.**, two miles from the western point of this island, lies **Ledge Point**, from which a narrow *ledge*, covered by three to five fathoms water and marked by kelp in summer, extends to the **E NE.** for a mile and a quarter. The point is moderately high and slopes gently toward the water. This point is the northern headland of Port McNeill, which enters the Vancouver shore in a **W SW.** direction for two miles—being about three-quarters of a mile wide. It is bordered by a sandy beach, which forms a tidal flat three-quarters of a mile wide at the head of the port. Nearly a mile **S SW.** from Ledge Point, and about two cables off the southern shore, lies the *Eel Reef*, which covers at three-quarters flood.

Sunken Ledge.

Port McNeill.

SAILING DIRECTIONS

FOR ENTERING PORT McNEILL.

If intending to enter Port McNeill, vessels should not approach the southern shore within half a mile until Ledge Point bears **NE.** half a mile, when good and well-sheltered anchorage may be had

* Printed **Cheslakee** in the Vancouver Island Pilot and on British Admiralty Chart No. 581.

in five or six fathoms, sandy bottom. In leaving the port bound to the westward, vessels should stand to the eastward until within half a mile of Haddington Island before attempting to reach to the northward of Ledge Point.

The northern shore of Broughton Strait to the northward of Ledge Point and Cormorant Island is formed by the southern shore of Malcolm Island. This island extends **E NE.** and **W SW.** for thirteen and a half miles, with an average breadth of over two miles. The shores are mostly low, with a sandy beach which extends off a short distance. The eastern extremity of the island is **Donegal Head**, high, cliffy, and bordered by a beach with strong tides in its vicinity. Seven miles westward from Donegal Head is **Dickenson Point**, connected by a bar with Haddington Island. On some parts of this bar only six feet are reported. Immediately to the westward of Dickenson Point is Rough Bay, a small indentation in which vessels may anchor in eight fathoms. **Malcolm Island.**

Five miles **W SW.** of this bay is **Pulteney Point**, the southwestern extreme of the island. From this point to the northward *foul ground*, marked by kelp, extends a quarter of a mile off the western shore of Malcolm Island, and **W.**, about one mile from the point, is *a shoal patch* of four and a half fathoms, extending thence half a mile in a westerly direction, and also marked by kelp. Abreast of the point, on the Vancouver shore, are several peaks exceeding a thousand feet in height.

GENERAL DIRECTIONS

FOR THE NAVIGATION OF BROUGHTON STRAIT.

In navigating the strait from the eastward, when abreast Beaver Cove, in mid-channel, a **W. ½ S.** course, passing not more than two cables south of Cormorant Island, until the western point of the latter bears **N.** by **E.**, clears the *Nimpkish bank;* the southwestern shore of Haddington Island should be rounded within half a mile to avoid the reef off Ledge Point.

When the northern shore of Haddington is in one with Yellow Bluff of Cormorant Island, bearing **E.**, a vessel may stand out of the strait by mid-channel, clear of all obstructions. Only small craft should go to the northward of Haddington Island, and vessels of large size are recommended not to attempt to beat through Broughton Strait.

QUEEN CHARLOTTE SOUND.

This extensive arm of the sea named by Wedgborough in August, 1786, connects the inner channels north of Vancouver Island with the Pacific Ocean. Under this name are generally included the waters between Vancouver Island on the south, Malcolm and Numas islands on the east, the mainland to Cape Caution on the northeast and north, and westward between Vancouver Island and the parallel of Cape Caution to the meridian of 128° 30′ **W.** These boundaries would give the sound a maximum length east and west of over fifty miles, and a width varying from ten to twenty-five miles. The northern and northeastern shores are little known, and are bordered by innumerable rocks and islands; but along the southern shore are two broad and navigable channels to the Pacific.

This sound and its approaches are delineated on British Admiralty Charts Nos. 555, 581, 582, 1917 and 2448. It was named **Pintard's Sound** by Gray in 1789, after J. M. Pintard of Boston, one of his owners. The western part between Vancouver and Queen Charlotte islands was called **Lane's Bay** by Hanna in 1786.

Broughton Strait enters the sound at its southeastern part. Hence to **Thomas Point** the Vancouver shore extends nine miles in a **W.** by **N.** direction; it is low, without notable indentations, with a continuous sand or shingle beach, and with *foul ground* extending off shore for nearly a mile in some places, and marked by kelp.

W SW. three miles from Pulteney Point lies Su-quash Anchorage, on the bank which here fringes the Vancouver shore. This anchorage is somewhat protected from westerly winds by **Single Tree Point**, a small projection of the shore, and derives its only importance from the fact that a coal mine was worked in the immediate vicinity. The anchorage is within the three-fathom line with the outer edge of Single Tree Point, bearing **W. ⅓ S.**, about four cables distant. Details in regard to this unimportant locality can be obtained from British Admiralty Chart No. 581, (corrected to August, 1872,) on which a plan of it is given; from which it appears that the approximate position of the anchorage is **Su-quash Anchorage.**

Latitude ..... **50° 38′.5 N.**
Longitude ..... **127° 14′.7 W.**

It is **H. W. F. and C.** at $0^h\ 30^m$, with a spring rise of sixteen feet.

Nine miles W. by N. from the western termination of Broughton Strait is situated Beaver Harbor, on the Vancouver shore, with an entrance three miles across, including the islands, and reaching a depth of two miles. The harbor is formed by a group of four or five islets and numerous rocks extending across and within the entrance, which lies between Thomas Point on the southeast and Dillon Point to the northwest. The shores of the harbor are low, with a gently shelving tidal flat extending nearly half a mile out from the beach of the southern bight of the harbor. The southwestern shore is flanked by a range of seven hills rising from four to six hundred feet above the sea. There is good anchorage in the southwestern part of the harbor, but northeasterly winds send in a heavy sea, preventing a landing on the southern shore for days together. On the southern shore is a large Indian village and **Fort Rupert**, a post established by the Hudson Bay Company. Near the post a portion of land has been cleared and a garden established, where it is stated that the fruit and vegetables suited to the climate are produced in great abundance.

Beaver Harbor.

The astronomical station on Shell Islet is stated to be in

Latitude ..... 50° 42′ 36″ N.
Longitude ..... 127° 25′ 07″ W.,

by the more recent authorities.

TIDES.

It is **H. W. F. and C.** at 0h 30m a. m., according to observations made in May 1860, and the rise about sixteen feet.

The variation of the compass in 1862 was 24° 10′ E.

Thomas Point, the southeastern headland of the harbor, is low and rocky, with some rocks lying a quarter of a mile to the westward from it. Three-fifths of a mile **NNW.** from the point is **Deer Island**, two hundred and forty feet high, wooded, half a mile in diameter, and of a rounded shape. **SE.** from it lie some islets, bold-to. The channel between this island and Thomas Point is clear of dangers and somewhat less than half a mile wide. From the northwestern shore of the island a broad reef extends to the **NW.**, having from one to ten feet on it, and marked by kelp. To the northward of this reef, and separated from it by a boat passage, are some islets surrounded with *foul ground*, except on their northwestern side.

Foul ground.

Four cables **N.** by **E.** from Deer Island is **Round Island**, small, nearly bare of trees, but high, conspicuous from the eastward, and bold-to except for a short distance on its **S SW.** extreme. **W SW.** half a mile from the western edge of Deer Island are the **Cattle Islands**, one hundred and eighty feet high, small and wooded, connected at low water by bars and foul ground; the southernmost, known as Shell Islet, is the astronomical station, from which *a reef* extends southward a cable and a half, awash at high water. Westward from the entire group a bank with less than three fathoms on it extends nearly a cable. A quarter of a mile westward from Shell Islet is *a shoal patch* with three and a quarter fathoms, and **W SW.** about two cables from the patch is *Cormorant Rock*, covered at high water, with a small shoal about it. The passages between these shoals, the Cattle Islands and the shore are clear and carry about six fathoms.

Peel Island, in the northern part of the harbor, is three-quarters of a mile long **NE.** and **SW.**, and a third of a mile wide. It is about two hundred feet high and wooded; two cables northward from it lie the two small bare rocks called the Charlie Islets. The passage to the westward of Peel Island is known as the Dædalus Passage, is two cables wide in its narrowest part, and carries seventeen fathoms. There are several shoaler patches in it, but none with less than four fathoms. The southeastern shore of Peel Island is steep-to, and there is a good passage two cables wide between it and the reefs and rocks northwestward from Deer Island.

Dædalus Passage.

Dillon Point, the northwestern headland of the harbor, is much broken, wooded and rocky, with rocky shores and some small islets lying close inshore.

SAILING DIRECTIONS

FOR APPROACHING BEAVER HARBOR.

Navigators intending to enter Beaver Harbor from the eastward should not approach the Vancouver shore within a mile until up with Thomas Point bearing nothing to the northward of **W.** by **S.**, and, if beating to windward, great caution should be observed in standing to the northward,—the depth of water and existing dangers in this part of the sound being but little known.

FOR ENTERING THE HARBOR.

The harbor is easy of access for sailing vessels or steamers. There are three passages into it, but the southeastern one is generally used, is wide enough for a vessel to beat through, and the only direction needed in entering it is that Thomas Point should not be approached nearer than two cables.

When the point bears SE. half a mile, the course is SW. ½ W. until Shell Islet bears NW. ½ W. and Thomas Point E. or E. by N., when anchorage may be had in ten or twelve fathoms. Good anchorage, better sheltered from northwesterly winds, may be had in six to nine fathoms westward of the Cattle Islands, but in rounding Shell Islet it should not be approached from the southward nearer than two cables to avoid the reef before mentioned. Sailing vessels cannot easily work through this passage, but with a fair wind or for a steamer the only direction required is to keep in mid-channel.

A plan of this harbor is given on British Admiralty Chart No. 2067, corrected to 1867, from which minor details may be had.

Northwestward from Dillon Point three-quarters of a mile lie the **Masterman Islands**, a group of several moderately high wooded islets and rocks, small and with foul ground between them and the shore. Immediately to the southward of these islands lies **Hardy Bay**, separated by Dillon Point from Beaver Harbor. From Dillon Point westward to Duval Point the width of the entrance is three miles,—the bay having about the same length in a N. by W. and S. by E. direction. It narrows toward the head, where, for a mile or more, it becomes exceedingly contracted, and in this portion are some outlying rocks. A wide sand-flat abuts on the termination of the bay. The shores are rugged and the depth of water too great for anchorage, except in the contracted portion, which should not be entered without good local knowledge. **Duval Point**, the western headland of the bay, is on an island separated from the Vancouver shore by a narrow passage. This island forms the southern headland of the eastern entrance to the southern or Goletas Channel between the inner and the outer portions of Queen Charlotte Sound.

For vessels not desiring to enter Beaver Harbor, the course from the western entrance of Broughton Strait to the eastern entrance of Goletas Channel is W. by N. ¾ N., twelve and a half miles; and to the entrance of New Channel, NW. by W. ¾ W., fourteen miles.

GOLETAS CHANNEL

extends from Duval Point to Cape Commerell, along the northern shore of Vancouver Island, in the direction of W. ½ S. and E. ½ N. for twenty-two miles, with a variable breadth of one to two and a half miles. The northern shores are formed by a group of islands through which there are several navigable passages. The shores are high, rugged and mostly steep-to except in the western part, and may generally be approached to a quarter of a mile. The soundings throughout the passage to its western entrance are very deep, varying from eighty to one hundred and ninety fathoms; but at the western extremity the bottom suddenly rises from forty to seven, and in one place to less than three fathoms, forming a bar which stretches completely across the channel and prevents, in a great measure, the rising of any heavy sea inside the channel during westerly gales.

TIDES.

It is H. W. F. and C. at $0^h\ 30^m$ throughout Goletas Channel, and the range of the tide averages thirteen feet. The currents in the eastern part of the channel run from one to three knots, but near the western entrance, in the vicinity of the bar, they are much stronger, reaching two to five knots, and turning by the shore shortly after high and low water.

The variation of the compass in this vicinity in 1862 was 24° 15′ E.

This channel, with New Channel and Shadwell Passage, is delineated on British Admiralty Charts Nos. 555 and 582. Bull Harbor and Shushartie Bay are given in larger proportions on No. 2067.

The Gordons.

At the eastern entrance Goletas Channel is separated from New Channel to the northward by the **Gordon Group** of numerous small islands running in an easterly and westerly direction for five miles. They are high, rugged and steep-to. A remarkable peak, called Miles Cone, three hundred and eighty feet high, appears on the eastern or Doyle Island, which is slightly more than two miles northward from Duval Point. About one mile south from the Gordons, and three miles NW. by W. ¾ W. from Duval Point, is **Duncan Island**, half a mile in diameter and three hundred feet high.

Dangers.

A little over a mile to the westward from Duncan Island are the Noble Islets, thirty feet high, between which and the Gordons some *dangers* are supposed to exist. NW. about a mile from the islets, between Hurst Island of the Gordon group and Balaklava Island, is the **Christie Passage**, half a mile wide, running in a N NW. direction, and connecting Goletas and New channels. The shores are free from dangers, except *two shoals* extending about two cables eastward from George Islet, of small extent, on the Balaklava shore; which shoals are marked by kelp, with nine fathoms close to them; and have upon them one and three fathoms water respectively. The depth in mid-channel varies from thirty-five to forty-five fathoms. The tides run through it with a strength of one to three knots, flooding to the southward. Vessels intending to go through the channel may pass on either side of the Noble Islets, though the best passage is westward from them.

Shoals in Christie Passage.

To the westward of the passage lies **Balaklava Island.** This island is two miles and a half long in a **NW.** by **N.** and **SE.** by **S.** direction, and averages three-quarters of a mile in width. It is rugged and irregular, with three peaks, and forms the northeastern shore of Browning Passage, which separates it from Galiano Island and connects New and Goletas channels. This passage is about three miles long, trending **NW.** and **SE.**, and is two cables wide in the narrowest part. There are some small rocks and islets along its shores and off its **NE.** and **SE.** headlands, but it is deep, and a mid-channel course through it free from danger. The tide in this passage is very weak.

Browning Passage.

At the southern entrance **Boxer Point**, the southwestern headland of the passage, is also the southern extreme of Port Alexander, a long and narrow indentation of Galiano Islahd. This port is a mile and two-thirds in length in a **NW.** and **SE.** direction, and less than half a mile wide. There is a small islet in the middle of it **NW.** ¾ **N.** nearly a mile from Boxer Point, and another close to the point.

Port Alexander.

This port is easy of access to steamers and sailing vessels with a fair wind, requiring no directions for entering, and affording good anchorage in twelve to thirteen fathoms half a mile **SE.** from its head, well sheltered from all but southeasterly winds. The shores are bold and rocky, and it is protected to the northeastward by a high and narrow peninsula of Galiano Island.

Galiano Island.

This, the largest of the islands which contribute to form the northern shore of Goletas Channel, is of sub-triangular shape, about eight miles long in an **E.** and **W.** direction and over three miles broad,—its longest side fronting to the southward. Its northern and eastern shores are very much broken, the southern and northwestern shores nearly straight and with few indentations.

About four miles westward from Boxer Point is a small cove, where shelter might be found by small craft in westerly winds. A mile and a third to the westward from the head of the cove, and somewhat more than half a mile inland from the southern shore of the island, lies **Mount Lemon**, a remarkable conical peak twelve hundred feet high. Within a mile of the western extreme of the island are two peaks between seven and eight hundred feet high, a third of a mile apart **N.** and **S.**, the southern peak close to the shore of the channel. These form the so-called **Maginn Saddle**, used as a landmark in the navigation of Shadwell Passage.

The southern shore of Goletas Channel, high, very rugged, rocky, steep-to and without important indentations, extends in a westerly direction from Duval Point fourteen and a half miles to Shushartie Bay, a small indentation of the Vancouver shore, about half a mile in extent either way and open to the northward. Its shores are high except at its southern extremity, where there is a tidal flat a fifth of a mile in width, behind which is a little low land. Close to its eastern headland is a small rocky islet which is stated to be in

Shushartie Bay.

Latitude	**50° 51′ 22″ N.**
Longitude	**127° 51′ 20″ W.**

This islet is known as Halstead Islet and the point behind it is referred to as Halstead Point, but is not named on the charts, which also differ in the spelling of the name of the bay, which is in some cases denominated Shucartie instead of Shushartie.*

TIDES.

The rise and fall of tides in this bay is stated to be twelve feet.

There is a limited but tolerable anchorage just inside Halstead Point in about thirteen fathoms, a cable **W.** from the eastern shore; however, on account of the steepness of the bank it cannot be highly commended.

A cable and a half **W.** from the northern edge of Halstead Islet lies *Dillon Rock*, covered at one-quarter flood and having about nine feet over it at high water. This constitutes *a danger* for vessels entering the bay from the eastward. It appears on Hanna's chart of 1788, but was subsequently lost sight of.

SAILING DIRECTIONS

FOR ENTERING SHUSHARTIE BAY.

I. ***From the Eastward.***—If Dillon Rock be covered, an attempt to enter should not be made until the eastern peak of Shushartie Saddle (a remarkable double-topped mountain 1900 feet high, situated southward from the bay) bears **S.** ¾ **E.** in one with an Indian village at the head of the bay,

* Called **Shucartie Bay** on the original edition of the present form of British Admiralty Chart No. 2067. It was surveyed by Mr. W. W. DILLON, Master H. M. S, *Dedalus*, 1850, and called by him **Port Shucartie.** The later charts all adopt the spelling Shushartie. It was discovered by Captain Robert Funter in 1788 and named **Raft Cove** by him. He prepared a chart of it which was published in Meares' voyage, and, separately, by A. Dalrymple in 1791.

when the course in lies on that bearing until Halstead Point bears **E.** by **N.**, when the vessel may be headed for the eastern shore, anchoring directly fourteen fathoms are obtained, about one cable distant from the bank, with the headlands of the bay bearing respectively **NE.** and **NW.** by **W.**

II. ***From the Westward.***—In entering from the westward the western shore should be kept aboard until Halstead Point bears **E.** by **N.**, when the course will be as above stated.

A plan of this bay is to be found on British Admiralty Chart No. 2067, with corrections to September, 1867.

Beyond Shushartie Bay the coast rounds out to the northward without indentations. Two miles to the westward from Dillon Rock lies **Shingle Point**, low and with a beach running off a short distance. This point is one of the landmarks for crossing the bar at the western entrance of Goletas Channel, and to the westward of it a landing on the Vancouver shore is difficult to make except in fair weather.

W SW. from this point five and a half miles is Cape Commerell, the northernmost (true) part of Vancouver Island and the southern extreme of the western entrance of Goletas Channel. The cape is low and fringed about with rocks which extend, in some places, two cables off shore.

Cape Commerell.

There is an Indian village on the eastern side of the cape. To the eastward from Cape Commerell the Vancouver shore forms a large bay three miles wide in a **W SW.** and **E NE.** direction and penetrating the shore about one mile, with two and a half to six fathoms water over a rocky bottom, unsuitable for anchorage. The shoaler patches in this bay are marked by kelp and extend to the southeastward from a point **NE.** by **E.**, two miles from Cape Commerell. They are known as *Tatnall Reefs*. In the western third of the bay there is also a small islet called Weser Islet, eight feet high and a quarter of a mile off shore.

Immediately abreast of Shushartie Bay, and one and three-quarter miles **N NW.** from Halstead Point, is the entrance to Shadwell Passage, which separates Galiano Island from Hope Island, connecting Goletas Channel with the open waters of Queen Charlotte Sound. The northern portion of Shadwell Passage is divided into two parts by **Vansittart Island**, and the **NE.** portion is known as **Bate Passage**. The main passage is three and a half miles long in a north and south direction, and varies in breadth from half a mile to a mile and a half. The eastern shore, formed by Galiano Island, is nearly straight, but the western is irregular and broken, with some rocks and islets off the indentations of the southwestern part, and foul ground extending nearly half a mile from shore between Turn Point and Cape James.

Shadwell Passage.

At the southern entrance is **Willes Island**, a quarter of a mile in diameter, two hundred feet high, steep-to, and close to the western extreme of Galiano Island. **SE.** by **S.** from it, about a quarter of a mile, is Slave Islet, low and of small extent. The western headland, bold, two hundred feet high, rocky, fringed with kelp and presenting a cliffy appearance, is known as Heath Point. Two miles northeastward is Turn Point, about midway through the passage, backed by a summit three hundred feet high and of a similar character. Between these are irregular indentations with some rocks and islets. From Turn Point, **NW.** by **N.** ½ **N.** about two miles, is **Cape James**, a rocky bluff ninety feet in height, the northwestern headland of the passage, with foul ground occupying the bight between it and Turn Point.

Center Island, a third of a mile **N.** by **E.** ½ **E.** from Turn Point, is small, with a rock immediately to the southward of it, and another, *Suwanee Rock*,* four feet above low water, in mid-channel, **W.** by **S.** ½ **S.**, a cable distant. About these and the shoals on the Hope Island shore kelp extends some distance. There is a clear passage only on the side eastward from Center Island, and this is not recommended.

Vansittart Island, in the middle of the northern part of the passage, is nearly a mile long, two hundred and sixty feet high, and three-quarters of a mile wide. To the westward from it rocks, islets and foul ground extend for more than half a mile north of One-Tree Islet, and from the northern point of Vansittart the Nicolas Islands, two wooded islets seventy feet high, stand off to about one-third of a mile.

One-Tree Islet, somewhat more than half a mile **N.** from Center Island, is very small, about forty feet high, bearing one tree on its summit, which is very conspicuous when seen from the northward and affords a good mark to identify the passage. The islet, except for an adjacent small dry rock, is steep-to on its western side, but between it and Vansittart is *foul ground*. The soundings in the southwestern part of the passage are from forty to a hundred fathoms, decreasing rapidly to the northward, reaching as little as seven fathoms near One-Tree Islet.

TIDES.

The flood tide runs southward through the passage with a strength of about four and a half knots; while the ebb reaches about two knots in a contrary direction; or, **SE.** from Center Island, runs as strong as the flood. Between Vansittart and Center Islands are sundry tide whirls or ripples while the tide is running.

* U. S. S. *Suwanee* was lost on this rock in July, 1869.

This passage may be used by steamers or sailing vessels with a fair wind. It would be inadvisable to attempt to beat through it, as there is generally a strong tide and heavy swell in its northern part. It is the passage generally taken by the Hudson Bay Company's vessels when bound north from the inner waters north of Vancouver Island, yet it is not recommended by the Admiralty surveyors.

To the eastward of Vansittart, Bate Passage is deeper and nearly straight. It appears easier to navigate, and is in most respects preferable to the western passage, and the tides form no strong ripples.

The Shadwell and Bate passages are delineated on British Admiralty Chart No. 582, and on an enlarged scale on No. 555, (corrected to November, 1881.) The latter edition differs quite materially from the original edition of 555, issued in November, 1869.

SAILING DIRECTIONS

FOR THE USE OF SHADWELL PASSAGE.

I. ***From the Southward.***—In rounding the southeastern point Willes Island should be kept aboard. In passing eastward of Center Island it may be approached to about a cable length, and the western edge of One-Tree Islet to about two cables, after which the course is **N NW.**, leading out clear of all dangers.

If the eastern or Bate Passage is preferred, the navigator has merely to keep in mid-channel.

The best anchorage in Shadwell Passage, according to the Vancouver Island Pilot, is near the middle of the passage, in nine fathoms, with One-Tree Islet bearing **NE.** by **N.**, Center Island **SE.**, and Turn Point **S.**; *but these bearings do not plot in a satisfactory manner on any chart.*

II. ***From the Northward.***—In entering the passage the course is **S SE.** for the eastern edge of Center Island in one with the southern peak of Maginn Saddle, passing it and the other islands as before mentioned in nine to seventeen fathoms water.

Hope Island.

The western shore of Shadwell Passage is formed by Hope Island, the westernmost of the group which forms the northern shores of Goletas Channel. It is moderately high, with very irregular shores, six miles in greatest length and three and three-fourth miles in greatest breadth, with a general trend of **SW.** by **W.** and **NE.** by **E.** The southern shore is steep and may be approached to within a quarter of a mile; but near its western extremity *foul ground* runs off three cables. The sea breaks heavily along its northern and western shores, off which are several inlets and rocks,—the ten-fathom curve reaching two miles from the shore in some places.

Bull Harbor.

Two miles to the westward from Heath Point is Gallows Point, the southeastern headland of Bull Harbor, on the southern side of Hope Island, a contracted but perfectly land-locked anchorage. It runs in a northerly direction for a mile and a half across Hope Island, its head being only separated from the northern shore of Hope Island by a strip of low land four hundred feet wide. The breadth of the entrance is half a mile, but at half the distance to the head it contracts to a cable, after which it again increases in width to two cables. A cable and a half to the northward of the narrowest portion lies **Indian Island**, which, though small, completely shuts in the anchorage on the southward, leaving a passage to it on the eastern side a cable in width. Between the island and the western shore are only eleven feet of water. The anchorage is to the northward of the island, in four or five fathoms, muddy bottom, but there is room only for one or two vessels of moderate size to lie moored. Only small sailing vessels or steamers should use this anchorage, as it is difficult of access to long vessels from the narrow and tortuous entrance.

DIRECTIONS FOR ENTERING BULL HARBOR.

The only directions necessary for entering are to pass to the eastward of Indian Island and moor as soon as the vessel is north of it, anchors north and south.

The **NW.** point of Indian Island is stated to be in

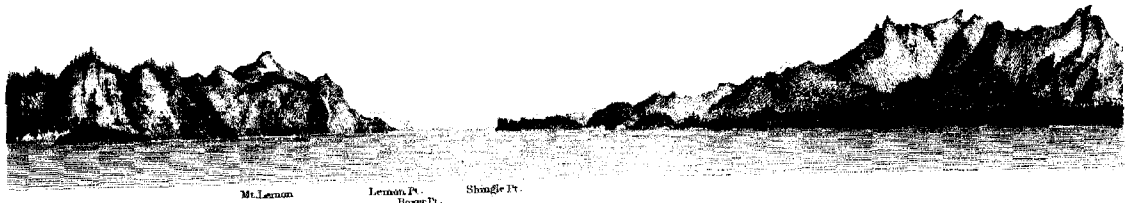
Latitude	**50° 54′ 47″ N.**
Longitude	**127° 56′ 03″ W.**

The variation of the compass in 1862 was **24° 20′ E.**; **H. W. F.** and **C.** at **0h 30m A. M.**,—the spring tides rising twelve and a half feet. Wood and fresh water can be obtained here with ease.

The harbor is shown on a large scale on British Admiralty Chart No. 2067, corrected to September, 1867.

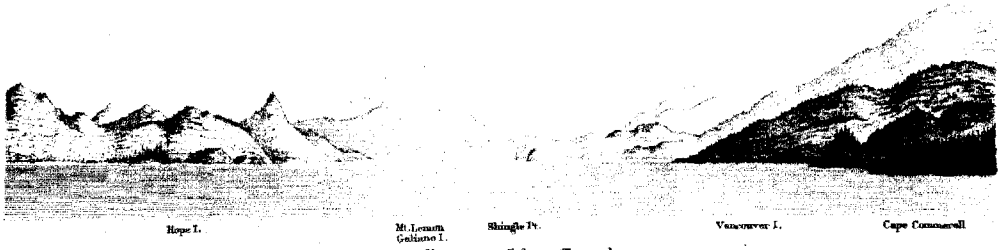
To the westward from this harbor the shore of Hope Island is rocky and fringed with kelp.

Two and two-third miles to the westward of Gallows Point the western extreme of Hope Island is formed by **Mexicana Point**, off which a reef extends to the southwest a quarter of a mile. To the southward, across the western entrance to Goletas Channel, between this point and Cape Commerell,



Leading Marks over Nahwitti Bar.

(From British Adm. Chart No. 583)



Western Entrance to Goletas Channel

(From British Adm. Chart No. 582)

extends the Nahwitti Bar,* or ledge, narrowest somewhat to the northward of mid-channel and expanding toward either shore, especially to the southward, where it includes the *Tatnall Reefs.* This bar is of sandstone formation, rising suddenly from forty to nine fathoms on the eastward, but diminishing very gradually in depth from the westward. The narrowest portion of this bar between the ten-fathom curves is about a mile in width. Northward of the Tatnall Reefs the depth varies from six to nine fathoms. Nahwitti Bar.

In heavy westerly gales the sea breaks on this bar from shore to shore. On the western edge of the bar the tides run from two to five knots. This passage is at present but seldom used.

SAILING DIRECTIONS

FOR PASSING THE NAHWITTI BAR.

I. ***From the Eastward.***—Vessels bound to the westward, after passing Bull Harbor, should keep Boxer Point, Galiano Island, open to the northward of Shingle Point until Mexicana Point bears **N NE.**, when the vessel will be to the westward of the bar. In beating out of Goletas Channel the shores of Hope Island may be approached to within a quarter of a mile until nearing Mexicana Point, which should not be approached nearer than half a mile to avoid the heavy swell and uneven ground. In standing to the southward the vessel should tack when Shingle and Lemon points are in one, about **E.** by **N.**, to avoid the Tatnall Reefs.

II. ***From the Westward.***—For vessels bound to the eastward, a course **E.** by **N.**, with Lemon Point open to the northward of Shingle Point, Vancouver Island, leads over the bar in the deepest water, seven to nine fathoms, well to the northward of the Tatnall Reefs. Another course is to keep Boxer Point, Galiano Island, open, with Shingle Point **E.** $\frac{3}{4}$ **N.**, which leads in on nearly the same line. In making for the entrance the Vancouver shore should not be approached within the ten-fathom curve until Cape Commerell bears **SE.** by **E.** or to the southward of that bearing.

If the weather be clear, in crossing the bar in the deepest water, Mount Lemon, a high conical peak, should appear nearly midway between Shingle Point and Heath Point on the opposite shore, or nothing to the southward of midway between them.

NEW CHANNEL.

To the northward of the Goletas Channel, and separated from it by the islands which form the northern shore of that passage, **New Channel**, about twelve and a half miles long and varying from one and a half to four miles in breadth, is an extensive clear passage to the open waters of Queen Charlotte Sound. Its northern limit is formed by the Walker Group to the eastward and by a few low rocks and islets to the northwestward. Its least depth in the shoalest part is forty-five fathoms near the eastern end, and its shores, except in the vicinity of the Gordons, may be approached to nearly half a mile. Generally a heavy swell sets through New Channel from the westward, and, with the exception that there is more room for a large vessel to work in or out than in Goletas Channel, there is no reason for using it in preference to the latter unless, when running in before a heavy westerly gale, the sea were breaking on the Nahwitti Bar, across the western entrance of the Goletas Channel.

This being the case, after giving general directions for its use, it seems unnecessary for present purposes to describe the rocks and islets about this channel in detail.

SAILING DIRECTIONS

FOR USING NEW CHANNEL.

I. ***From the Eastward.***—If the wind be fair, a mid-channel course about **W.** by **N.** will carry a vessel clear. If working through, when between the Walker and Gordon groups the navigator should avoid approaching the southern shores of the former within half a mile, and should keep the southern part of the **Crane Islets** closed on the Gordons **E.** by **S.** $\frac{3}{4}$ **S.**, or nothing to the eastward of that bearing, until the eastern edge of Redfern Island bears **NW.** by **N.** $\frac{1}{2}$ **N.**, to avoid the *Grey Rock*, which covers at a quarter flood.

In the vicinity of Galiano and Hope islands the navigator should tack when about half a mile off shore, avoid entering Shadwell Passage and Roller Bay, and, until two miles west from Pine Island, should not bring it to bear to the eastward of **E.** by **N.**

II. ***From the Westward.***—The above directions also apply. When **Boyle Islet** bears **S.**, the vessel will be to the eastward, clear from *Grey Rock.*

* Sometimes written **Nahwhitti.**

HECATE STRAIT.

From the western entrances of Goletas and New channels two courses are open to the navigator bound for Dixon Entrance or the north. One of these, **Hecate Strait,*** is a broad sheet of water extending between the Queen Charlotte Islands on the west and the inshore portion of the Columbian archipelago on the east. Its length from the Scott Islands to its northern entrance abreast of the Butterworth Rocks is about two hundred and twenty miles; it gradually diminishes in width from ninety miles, at Cape St. James, to twenty at the northern entrance. It has been but slightly explored, and the few soundings which are on record, principally from H. M. S. *Hecate*, in 1862, show that the bottom is very uneven, and lead to the suspicion that thorough investigation might reveal serious dangers.

In the unpublished chart of Ingraham, Master of the brig *Hope* in 1791–2, a large number of soundings are given, showing a bank with five to twenty fathoms water extending from the northeastern and northern shores of Queen Charlotte Islands, in the same general trend as Invisible Point, toward Zayas Island. This bank extends more than half way across Hecate Strait, and was named *Dogfish Bank* by Ingraham. It has some shoal spots on it, among others one in about latitude 53° 50′, on which the ship *Margaret*, Captain Magee, struck in 1791, drawing thirteen feet of water, This was called *Margaret Rock* by Ingraham and does not appear on modern charts. It is evident, therefore, that the navigation of Hecate Strait, if attempted at all, should involve great caution until better surveys have been made.

Between the entrance to Skidegate Inlet of the Queen Charlotte Group and Bonilla Island are some channel rocks whose position appears to be doubtful. Little is known of the shore of the archipelago fronting the strait from the eastward, but several harbors and channels have been examined by the Royal Navy in Queen Charlotte Islands. According to Pilot W. E. George there is a current in Hecate Strait running one or two knots in a northeasterly direction. All that is known in regard to this strait may be found on British Admiralty Charts Nos. 1923 and 1923 A, covering the region from Cape Caution to Port Simpson, and Dawson's geological map of the Queen Charlotte Islands. The southern half of this region is shown on 1923 and the northern on 1923 A. It does not seem necessary to enter into details in regard to a passage at present so little known and the use of which presents no particular advantages.

The other course, and that which is usually adopted by steamers and others desiring to make the island passage from Queen Charlotte Sound to Dixon Entrance, is by way of Fitzhugh Sound, Lama Passage, Seaforth Channel, Milbank Sound, Finlayson and Grenville channels, and Chatham Sound to Dixon Entrance.

The Queen Charlotte Islands, which bound Hecate Strait to the westward, form an archipelago, which is still but partially explored. Of the western coast of these islands hardly anything is known.

Queen Charlotte Islands.

They were named in August, 1787, by Dixon, after his vessel. In the previous year Captain Lowrie, of the British Navy, who commanded the snow *Captain Cook*, of Bombay, named them **Prince Edward's Islands.** James Hanna, commanding another trading vessel on the northwest coast in 1786, called them **Nova Hibernia.** In 1789 Robert Gray named them the **Washington Islands**, and Meares, in ignorance of the subdivision of the group by water, called it the **Great Island.** Perez, in 1774, placed it on his chart as **Isla de Florida Blanca**, in honor of the then viceroy of Mexico.

The group is about two and a quarter degrees of latitude in extent, **NW.** and **SE.** It is of triangular form with the apex to the **SE.**, and extends through about two degrees of longitude. The northeastern part is level and attractive; the rest more or less broken and mountainous; the whole is densely wooded.

SAILING DIRECTIONS

FOR THE NAVIGATION OF QUEEN CHARLOTTE SOUND.

I. ***From the Southward.***—After clearing the Nahwitti Bar at the entrance of Goletas Channel, as previously directed, when **N.** from Cape Commerell one and a half miles, the course across the eastern part of Queen Charlotte Sound for Cape Caution is **N.** ¾ **E.**, eighteen and a quarter miles.

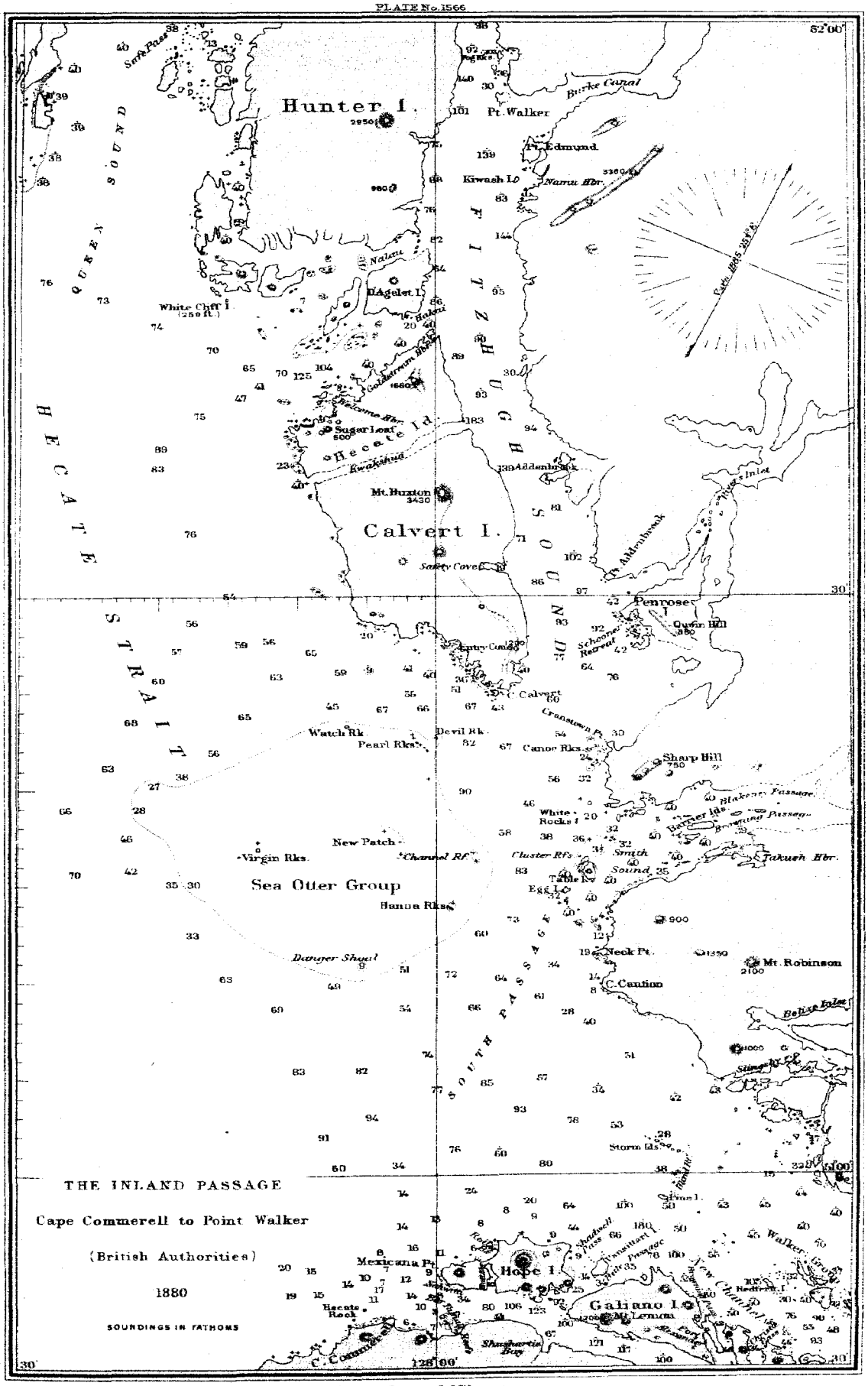
From a position at the northern entrance of the Shadwell Passage, **E.** half a mile from Cape James, the course for Cape Caution is **N.** by **W.** ½ **W.**, thirteen and two-thirds miles.

From a position near the entrance of New Channel and Bate Passage, **NW.** by **W.** from Greeting Point two and a half miles, with the western edge of Vansittart Island bearing **S.** by **W.** ½ **W.**, the course for Cape Caution is **NW.** by **N** ½ **N.**, twelve and two-thirds miles.

From a position half a mile **N NW.** from the eastern head of the north entrance of Christie Passage to the above-mentioned point of departure at the entrance of New Channel the course is **W.** by **N.** ½ **N.**, eight and one-third miles. Either course is clear of all dangers. In a heavy southwest gale the transit of Queen Charlotte Sound were better not attempted.

* **Vancouver Strait** of Berghaus and other German geographers.

PLATE No. 1566



THE INLAND PASSAGE

Cape Commerell to Point Walker

(British Authorities)

1880

SOUNDINGS IN FATHOMS

Cape Caution, the most westerly projecting part of the continent in this neighborhood, except Neck Point, terminates in rugged, rocky, low hummocks. The tops of the trees are about two hundred feet above the sea. The shore is of a white granite, rising gradually inland. At a distance of a mile SW. from the cape, there is sixteen fathoms water. The shores of the mainland, taking a northerly and easterly direction, make it a conspicuous cape, which received its name from Vancouver on account of the dangerous navigation in its vicinity. It is covered with dwarf-pine and other small trees. It is placed by English authorities two miles and a half south of Vancouver's position for it, in **Cape Caution.**

Latitude	51° 9′ 36″ **N.**
Longitude	127° 48′ 12″ **W.**

From **Neck Point**, which is situated about two and a half miles north from Cape Caution, his bearings for the outer reefs would agree with later authorities, which they do not do if platted from Cape Caution of the charts. It is probable that some confusion of Vancouver's real position with another of the numerous points in this neighborhood led to the erroneous bearing, if the English charts are accurate in this respect.

This vicinity is represented on a large scale by British Admiralty Chart No. 2448.

Blunden Bay, the open indentation between Cape Caution and Neck Point, has in its northern part Indian Cove, where the Indians rendezvous on their canoe journeys between Queen Charlotte and Fitzhugh sounds. It affords good shelter for boats, and is probably the cove mentioned by Vancouver.

DANGERS

BETWEEN CAPE CAUTION AND THE ENTRANCE TO FITZHUGH SOUND.

A line drawn from Cape Caution in the direction of **NW.** ½ **W.** passes outside of all dangers south of Egg Island.

Egg Island, a small, rocky, round island, two hundred and eighty feet high, and the chief landmark between Goletas Channel and Fitzhugh Sound, lies **NW.** ¼ **N.**, five and a quarter miles from Cape Caution. On the same line lie the *Iron Rocks*, about four miles from the cape. The *South Iron* is marked by kelp and seldom breaks; the *North Iron* dries seven feet above low water. Eastward from the *South Iron*, nearly a mile, is a *rocky patch*, marked by kelp and known as *Hoop Reef*. ***Iron Rocks.***

S. from Egg Island, six cables, lies a sunken rock, known as the *Denny Rock*, which seldom breaks; and to the **NE.** from it and **S SE.** from Egg Island lie three islets, thirty feet high, called **Egg Rocks.** **W.** ½ **N.**, eight miles from Cape Caution, is the southern edge of the patch known as the *Hanna Rocks*.* These rocks are awash at high water and constitute a serious danger, but are usually marked by breakers. They form an oblong patch about half a mile in diameter in a **N.** and **S.** direction. ***Rocks and breakers.***

Two miles and a half **N.** from this patch lies the *Channel Reef*, of similar character, except that it rarely breaks, and has six feet upon it at low water.

N NE. from Egg Island about a mile is **Table Island**, about one hundred feet high, with foul ground extending from it half a mile west, and numerous rocks and islets to the westward and northward of its western shore, prolonged to the northward across the entrance of Smith Inlet for two miles. **NW.** ¾ **N.** from Table Island about two miles are the **White Rocks**, two islets thirty-five feet high and close together; two-fifths of a mile **N NW.** from the southern one of these is the *John Reef*, a rock three feet out at low water; and about **N.** by **W.** from the White Rocks a mile and a quarter is the *James Reef*, a sunken rock which breaks at low water and of which the position is a little uncertain. ***James Reef.***

Five and a quarter miles **NW.** ¼ **W.** from Channel Reef lies *a breaker*. From this, curving to the northward and westward for nearly two miles, lie the **Pearl Rocks**,† fifteen feet high. Nearly a mile **N NE.** from these and **S SW.** from the land about Cape Calvert lies the *Devil Rock*, on which the sea seldom breaks. It is a sunken rock forming a serious danger.

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*Named for Captain James Hanna, who explored on this coast in 1786, but erroneously called the **Hannah Rocks** on the charts. On British Admiralty Chart No. 2448 it is called Hannah Rock.

†Named and discovered by Captain James Hanna in 1786. Outside of these lie the **Virgin Rocks**, also discovered and named by Hanna.

Off Cranstown Point, the southeastern headland of Fitzhugh Sound, the **Canoe Rocks**, in part above water, extend **W SW.** a mile and a quarter from the point, and between them and the mainland to the eastward extends rocky and foul ground for a mile and a half,—the rocks mostly visible. Behind Cranstown Point is **Open Bay**, of small extent and disturbed by the oceanic swell, but in which anchorage may be had in seven to twelve fathoms. There are also a few rocks close in under Cape Calvert, the southwestern headland of the sound.

Rocks and breakers.

SAILING DIRECTIONS

FROM CAPE CAUTION TO FITZHUGH SOUND.

Having followed the previously given directions for approaching Cape Caution from any one of the points of exit from the interior channels north of Vancouver Island, on coming up with the cape the navigator should avoid approaching it within half a mile. Allowance should be made for tidal currents, whose irregularity necessitates great caution.

From a position three miles **W SW.** from the cape a direct course may be laid for the entrance to Fitzhugh Sound. This course is **N.** by **W.** $\frac{3}{4}$ **W.**, thirteen and three-quarters miles, when the Sorrow Islands south of Cape Calvert will bear **W.**, three and a quarter miles, and the vessel will be somewhat to the eastward of mid-channel. This course carries clear of all dangers.

In foggy weather, if the existence of current be suspected, after making Cape Caution a course may be laid to pass about a mile to the westward of Egg Island, which from its height is readily recognized. From a position one mile **W SW.** from the cape a **NW.** course for six miles carries clear of all dangers, passing at nearest about a mile and a quarter **W.** $\frac{3}{4}$ **S.** from the island and three-quarters of a mile westward from the reefs to the southward of Egg Island.

When Egg Island bears **E.** $\frac{3}{4}$ **S.** from the vessel a **NW.** by **N.** $\frac{1}{2}$ **N.** course for eight and three-quarter miles will bring the navigator up with the Sorrow Islands off Cape Calvert,—these bearing **W.** one mile. This course lies nearly in mid-channel. In beating in toward Fitzhugh Sound, until within four miles of Egg Island, vessels should not stand to the westward after the southern edges of Egg and Table islands are in one bearing **NE.** $\frac{3}{4}$ **N.**, (according to British Admiralty Chart No. 2448,) to avoid the dangerous ground to the westward. When Egg Island bears **NE.** $\frac{3}{4}$ **N.** four miles, in tacking to the westward the navigator should keep within three and a half miles of the island until it bears **E SE.**, after which it will be advisable not to bring it to bear to the southward of **S SE.** nor to the eastward of **E SE.** until up with the Sorrow Islands bearing **W.**, to avoid the reefs and foul ground on either hand. The flood is stated to set to the eastward with a rate of two knots in Queen Charlotte Sound.

TIDES.

There are no accessible data as to the currents of this locality. The flood is stated to set to the eastward with a rate of two knots in Queen Charlotte Sound. The soundings vary from forty to eighty fathoms. The establishment near the entrance of Smith Inlet* is said to be $1^h\ 0^m$, with a rise for springs of fourteen feet and for neaps of eleven feet. The locality is shown on British Admiralty Charts Nos. 1917 and 1923 (editions of 1879) and on an enlarged scale on No. 2448, April, 1878.

The extreme southwestern headland of Fitzhugh Sound is formed by Mosman Island, the southernmost of the Sorrow Islands, a small, rather low islet, two-thirds of a mile to the southward of the southern point of Calvert Island. It is wooded, and the group extending between it and Calvert Island comprises numerous rocks and islets, one being of considerable extent. The opening which separates them from Calvert Island bears the name of **Grief Bay** (Telakwas) on the English charts.

Sorrow Islands.

From seaward these islands are hardly to be distinguished from Calvert Island.† The southernmost islet is situated, according to English authorities, in

Latitude ..... **51° 24′ 30″ N.**
Longitude ..... **127° 55′ 53″ W.**

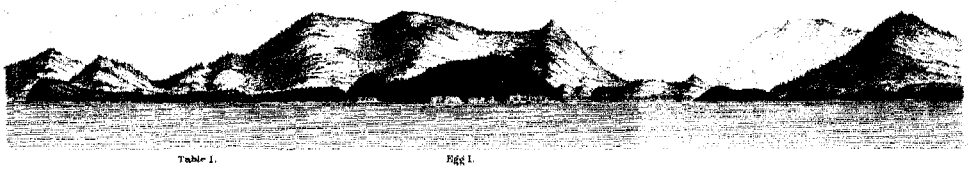
Two-thirds of a mile **N NE.** from it is **Cape Calvert** of the Admiralty Charts of 1867,‡ being the southern extreme of Calvert Island. It presents a broad face of rocky shore line, **NE.** and **SW.**

*Discovered and named by Captain James Hanna in 1786.
†Discovered and named by Captain Charles Duncan in 1787.
‡Subsequently named **Cape Mosman** by the U. S. Coast Survey.



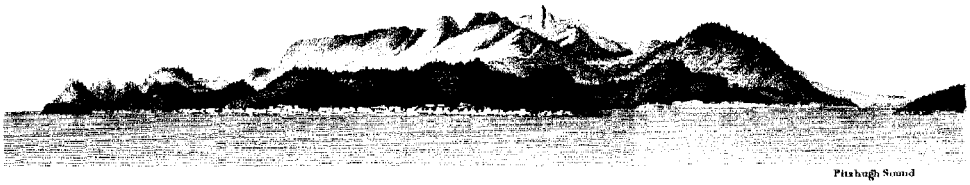
False Egg Island N ½ W.

(From British Adm. Chart No. 2458, 1872.)



South end Table Island N E ¾ N.

(From British Adm. Chart No. 2758, 1872.)



Cape Calvert B.C. N ¼ Miles.

(From a Sketch by Geo. Davidson, Assist. U.S.C. & G.S. 1867.)



Entrance to Welcome Harbor, Fitzhugh Sound, Leading Pk. over Bluff Pt.

(From British Adm. Chart No. 1482.)

about three hundred and fifty feet high, covered with a thick growth of spruce, hemlock and pine trees, but backed by mountains from two to nearly three thousand feet high on Calvert Island. A view is given of this cape in the U. S. C. S. Coast Pilot of Alaska, Part I, 1869.

E. ½ S. five miles from the cape lies **Cranstown Point**, a rocky peninsula with an open bay to the eastward of it, and guarded to the **SW.** by rocks and foul ground. This point and Cape Calvert form the southern headlands of Fitzhugh Sound.

FITZHUGH SOUND.

This passage, named by Captain James Hanna in 1786, is formed by Calvert and other islands to the westward and the mainland to the eastward, and extends in a **NW.** by **N.** direction for about forty miles, with an average width of more than three miles. The soundings indicate very deep water, apparently increasing in depth toward the northern portion of the sound. The shores appear in general bold and rocky, the western ones free from outlying rocks; the slopes are wooded and steep, and the elevations of the peaks vary from one thousand to thirty-five hundred feet. A number of passages, some still unexplored, lead to the eastward and westward from the sound. The tide is stated to flood to the northward.

About **NE. ½ N.** from Mosman Island, seven miles, is **Karslake Point**, situated on an island and forming the southern headland of the entrance to Schooner Retreat, an indentation of Penrose Island, protected to the westward and southward by numerous rocks and islands. According to Staff Commander D. Pender, R. N.,* this harbor offers a secure resting place, and with care may be entered safely by steam vessels. The Indian name of it is Kapilish.

Schooner Retreat.

The entrance to the anchorage trends in a **N NE.** direction from the vicinity of Karslake Point, where it is about half a mile wide, diminishing to about two hundred yards between **Sea Bluff** and the **Grey Islets**, six and a half cables to the northeastward from Karslake Point. The protection of the entrance to the **N NW.** is principally formed by **Ironside Island.** The latter is of irregular shape and rises to the height of two hundred feet. Inside the narrows Frigate Bay expands, six cables long **NE.** and **SW.** and about two cables wide, with soundings in from five to twenty fathoms. **N.** by **E.** from Karslake Point, a mile and three-quarters, Quoin Hill, on Penrose Island, rises nearly nine hundred feet above the sea.

N. by **E. ⅓ E.** from Karslake Point about one mile, in Frigate Bay, is an islet known as **Center Islet**, of small extent, and having a shoal with two fathoms on it extending from its eastern end over a cable **NE.** by **N.** toward the shore of Penrose Island. There are several islets and rocks in the eastern part of the bay, from which a boat passage extends to the **SE.**, joining the entrance of Rivers Inlet.

A sketch of this vicinity is given on British Admiralty Chart No. 1901, corrected to October, 1879, by which it appears that Center Islet is situated in

Latitude ---------- **51° 28′ 10″ N.**
Longitude----------**127° 44′ 38″ W.**

It is **H. W. F. and C.** at **0h 30m**,—springs rising fourteen and neaps eleven feet.

The variation of the compass was **25° E.** in 1868.

To the northward of Ironside Island are several protected sheets of water, but with exceedingly narrow and difficult entrances, which render it inadvisable to seek shelter in them.

SAILING DIRECTIONS

FOR ENTERING FRIGATE BAY.

From a position two cables **NW.** from Karslake Point, Quoin Hill bearing **N. by E. ½ E.**, the course is **NE. ½ N.** for the narrows, which should be passed in mid-channel—least water eight fathoms—or, keeping the eastern shore, which is bluff and bold-to, well aboard until the bluffs are passed, to avoid the foul ground on the western shore. A course **N. by E. ½ E.**, Karslake Point in mid-channel line, clears all dangers, and when the northern edge of Ironside Island bears **W. by S. ¼ S.** anchorage may be had in twelve to twenty fathoms.

According to Pender the best anchorage will be found just within Safe Entrance off a clean sandy beach in thirteen fathoms, with the northeast extreme of Ironside Island bearing **W. ½ S.** and the northwest extreme of Sea Bluff **S. ¼ W.** It is necessary to moor in this bay. During **SE.** and **SW.** gales the gusts are furious. With Safety Cove so near at hand it does not seem that it is necessary or desirable to use the contracted and difficult ramifications of Schooner Retreat, and they are not recommended.

*See U. S. N. Hydrographic Notice No. 66, 1877, p. 10.

Penrose Island, which forms the northerly protection of Schooner Retreat, lies in the mouth of Rivers Canal or Inlet, a branch of the inlet passing on either side of it. Point Addenbrook * forms the southern extreme of the shore on the western side of the northern entrance to the inlet. From Karslake Point this point bears **NW.**, distant nearly four miles. **NW. ½ N.** from Point Addenbrook, four miles, is **Point Hanbury**, on the southernmost of a group of several islands, the eastern part of which, with an opening behind them, is unexplored. One of these islands is known as **Addenbrook Island** and extends to the westward into the sound, narrowing the passage between it and Calvert Island to less than two miles.

W. by **S. ½ S.** from Point Addenbrook, four and a half miles, is the entrance to Safety Cove, (Indian name Oht-so-alis,) named by Duncan, in 1788, **Port Safety**; and consisting of an indentation of the shore of Calvert Island about a mile long **W SW.** and **E NE.**, and three or four cables in width. At its head is a muddy tidal flat, over which a stream, affording salmon in the season, empties into the cove. The shores are high, rising nearly a thousand feet, wooded, rocky and steep-to, except at the head. It is open to the **E NE.**, but affords good holding-ground in fifteen to twenty-five fathoms, soft mud. At the anchorage, in sixteen fathoms, the north point of entrance bears **NE. ⅜ E.** and the south point **E. ¼ S.** A conical peak at the head of the cove bears from the middle of the entrance **W. ½ S.**

Safety Cove.

There are outside, close inshore, near the northern headland, two small islets, which are useful in identifying the entrance, especially when coming from the northward in thick weather. In southerly gales it woollies severely from the valley at the head of the cove, but it is a perfectly safe anchorage. It affords a convenient refuge for vessels waiting for good weather to cross Queen Charlotte Sound, and requires no directions for entering.

A sketch of this cove appears on British Admiralty Chart No. 1901, corrected to October, 1879, on which it is stated that the astronomical station at the **NW.** angle of the cove is in

Latitude ..... **51° 31′ 49″ N.**
Longitude ..... **127° 56′ 23″ W.†**

It is **H. W. F.** and **C.** at **1ʰ 0ᵐ**,—springs rising fourteen and neaps eleven feet.

NW. ½ N. from the entrance to Safety Cove, about seven and a half miles, is another indentation of the shore, known by the native name of Kwakshua,‡ which according to the latest authorities is prolonged to Hecate Strait.

Kwakshua Opening.

Vancouver states that the opening presented the appearance of a very fine harbor, and in his chart it is indicated as divided into two arms. A small islet or rock exists off the northern headland, and one hundred and eighty-three fathoms, muddy bottom, are reported off the entrance, which is indicated to be three-quarters of a mile wide. The interior of this opening has not been explored.

The mass of land separated from Calvert Island by this passage has been named Hecate Island.‖

About **NW. ½ N.**, five miles from Kwakshua entrance, lies the entrance to Goldstream Harbor, at the northern extremity of Hecate Island, and protected by an island less than half a mile in extent, which lies off it to the **N NW.** This harbor is of very small extent and is entered by a very narrow and somewhat winding channel. The shores are rocky and fringed with kelp; the entrance is infested with rocks and islets, most of which, however, are visible. The total length of the harbor and entrance is about half a mile. The entrance to this harbor from Fitzhugh Sound is by an intricate passage little more than fifty yards wide.

Goldstream Harbor.

Evening Rock, which dries three feet at low-water springs, lies near the middle of the passage, about two cables within the entrance. In the channel there is a general depth of about six fathoms. The harbor is about two cables in extent and affords room for but one vessel in seven to fifteen fathoms, mud and sand. This place is recommended for small vessels by some authorities, but others do not speak highly of it. The navigator may draw his own conclusions from this description and the chart.

The least water in the passage appears to be about five fathoms. At the **NW.** corner of the anchorage there opens to Hakai Strait a passage which appears not to be navigable. From **Kelp Point**, the northwestern headland of the entrance, foul ground, covered with kelp in two and a half fathoms, extends a cable to the northward. The geographical position of **Hawser Point** is reported to be

Latitude ..... **51° 43′ 19″ N.**
Longitude ..... **128° 00′ 34″ W.**

H. W. F. and **C.** occurs at **1ʰ 0ᵐ**,—springs rising fifteen feet and neaps twelve feet.

The variation of the compass in 1868 was **25° 15′ E.**

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*Named by Vancouver in 1792. See his Voyage, vol I, page 378. In his atlas it is spelled **Addenbrooke**, a spelling followed on the British Admiralty Charts.

†Depending upon Shell Island, Beaver Harbor, being in Longitude **127° 25′ 07″ W.** Pender, *l. c.*

‡Sailing vessels have passed through here. This was supposed by Vancouver to be the **Port Safety** of Duncan in 1788, but others more correctly identified Vancouver's **Safety Cove** with Duncan's Port.

‖By Pender, *l. c.*, p. 12, 1876.

From the existing dangers it cannot be recommended that vessels should enter this harbor except in charge of a pilot or with good local knowledge. It is represented on British Admiralty Chart No. 1901, corrected to October, 1879.

Immediately to the northward of the small island north of Goldstream Harbor, a strait, over a mile wide at its **NE.** termination, trending thence **SW.** by **S.** about seven miles, widening to nearly four miles at its **SW.** end, and called by the natives Hakai, extends from Fitzhugh Sound to Hecate Strait. It is obstructed by numerous rocks and islets, according to British Admiralty Chart No. 1923, (corrected to December, 1879,) but a clear passage exists a little **SE.** from mid-channel, nearly a mile wide, and with over forty fathoms water, through which Vancouver reached the sea in 1792. **Hakai Strait.**

The obstructions on the **SE.** shore of this strait are called the **Starfish Islets**, and among them is situated **Welcome Harbor**, of small extent, shown by a plan on British Admiralty Chart No. 1462. In its vicinity are numerous dangers.

H. W. F. and **C.** at $0^h\ 0^m$; springs rise fifteen or sixteen feet and neap tides twelve or thirteen feet.

The variation of the compass here was **24° 45′ E.** in 1872.

The northern shore of this strait is chiefly formed by **D'Agelet Island,*** about four and a half miles long **N.** by **E.** ½ **E.** and **S.** by **W.** ½ **W.**, three miles wide and six hundred and fifty feet high. It is separated from Hunter Island, of the Calvert group, by another strait called Nalau, which appears to be choked up with rocks and islets, but has not been completely surveyed.

The eastern shore of Fitzhugh Sound, from Addenbrook Island, fifteen and a half miles **NW.** by **N.** ¼ **N.**, to Kiwash Island, is abrupt, bold-to, and with but few and inconsiderable indentations, none of which appear to afford anchorage.

Kiwash Island, of small extent, two hundred feet high and wooded, lies immediately abreast of Namu Harbor. This harbor or anchorage is included between Cliff and Kiwash islands to the westward, Plover Island, one hundred and fifty feet high, and the mainland to the south, east and north. From the central portion of this sheet of water there is an extent of three and a quarter cables in every direction, free of dangers, and averaging twenty-two fathoms in depth. To the northward two contracted inlets extend a mile into the mainland. **Harlequin Basin** is the terminal expansion of the more northern inlet; the other, infested with rocks and extremely narrow, is called **Rock Creek.** The entrance to the latter, which is somewhat expanded, is marked by wo islets—**Sunday Islet** to the northward and **Clam Islet** to the southward, **N.** ¾ **W.** and **S.** ¾ **E.**, at quarter of a mile from one another. **Namu Harbor.**

The entrance between them is known as **Whirlwind Bay,** and here more protected, but very contracted, anchorage may be had in nine to fourteen fathoms. East of the opening between Sunday Islet and Observation Point, and **SE.** by **S.** ¼ **S.** one cable from Green Islet, in the mouth of Rock Creek, is *a sunken rock* with three feet of water on it and deep water all around it, known as *Loo Rock*. ***Loo Rock.***

This vicinity is represented on British Admiralty Chart No. 1901, which gives as the position of the astronomical station, Observation Point,

Latitude	51° 51′ 44″ **N.**
Longitude	127° 52′ 23″ **W.**

It is **H. W. F.** and **C.** at $1^h\ 0^m$,—springs rising fifteen and neaps twelve and a half feet.

Two or three miles to the eastward of the harbor a chain of mountains, varying from twenty-six hundred to thirty-three hundred and eighty feet in height, stretches in a **N NE.** and **S SW.** direction for six or seven miles.

SAILING DIRECTIONS

FOR THE USE OF NAMU HARBOR AND VICINITY.

There is a clear passage either side of Kiwash Island three or four cables wide. No directions are necessary for entering. Anchorage may be had in twenty-one fathoms half a mile **E NE.** of Kiwash Island. A quarter of a mile farther, in the same direction, a more protected position may be taken up, in ten or twelve fathoms, midway between Sunday Islet, bearing **NW.**, and the point opposite in Whirlwind Bay. Squalls from the high land and the vicinity of the *Loo Rock*, in addition to the still more contracted space, render it inadvisable to bring Sunday Islet to bear to the westward of **W NW.** in entering this bay.

About two miles **N.** by **W.** from Kiwash Island lies (with some islets near it) **Point Edmund** of the Admiralty charts, the southern headland of Burke Canal, which extends hence to the northward.†

* Here named for Lepaute D'Agelet, the astronomer who accompanied La Perouse in his explorations on this coast in 1786.

† This is not the **Point Edmund** of Vancouver, which, as demonstrated by his bearings, was farther to the north and east in the canal.

Across the entrance, two miles **NW.** by **W.**, lies **Point Walker**, the northern headland, situated on a small island. This island is steep-to, but at a distance of two cables there is only twenty-six fathoms, muddy bottom, deepening quickly a short distance farther out. This position might be used as a temporary anchorage in a fog. There are *numerous reefs* north of the island. From Point Walker **NW.** ¼ **N.** three miles are the Fog Rocks, appearing from the south to be nearly in the middle of the sound, and indicated as visible at all times. They appear to be three in number, (Pender notes six above water,) rising about ten feet above high-water mark, flat and of a whitish color. The westernmost appears to be the largest, is twenty-five feet high, and has a clump of small trees on its northern end. Close to the southernmost Fog Rock several small black rocks uncover at low water. There is probably foul ground all around them. A passage between them and the eastern shore has one hundred and three fathoms, muddy bottom, but the best and usual passage lies westward from the rocks, which should not be closely approached. The passage between them and the shore of Hunter Island is about a mile wide. To the eastward of these rocks, and stretching along the shore of King Island as far as Point Walker, are a number of rocks and islets, behind which is an indentation in the shore-line looking as if it might afford anchorage, but of which no information is on record. From the Fog Rocks to the northern termination of Fitzhugh Sound as here understood, the general direction of the eastern shore is **N NW.** and the distance about six miles.

Fog Rocks.

The shore of Hunter Island from the strait (called by the natives Nalau) which separates it from D'Agelet Island extends in a general direction of **N.** by **W.** ¼ **W.** for twelve miles, with only two small openings, neither of which appear to have been surveyed.

The northern one of these, called Kiltik Creek, is less than two cables wide, and extends nearly a mile in a westerly direction. It is shoal for one-third of a mile from its head, but the remainder has an average depth of twenty fathoms in the centre. It is supposed to be available for small vessels, but has not been examined in detail.

The shore of Hunter Island hereabouts is backed by mountains which at one point attain a height of nearly three thousand feet.

About midway between Fog Rocks and the entrance to Lama Passage the flood tides from the northward and southward meet, according to Pilot W. E. George.

Thirteen miles from the southeastern point of the island a small islet lies off an indentation of the shore, forming what has been termed by the U. S. Coast Survey *The Trap*. On the British Admiralty Chart No. 2430, of 1856, with corrections to 1868, an opening is indicated in this vicinity, and navigators not possessing the later and much improved charts (corrections to 1881) might be tempted by the appearance of an opening, especially at night, to enter this cove. It is, however, extremely contracted, not affording room for a steamer to turn, and dangers are supposed to exist in the passage around the islet, for which reasons it should be avoided.

The Trap.

A mile and three-quarters farther to the northward is a very small islet, one hundred and thirty feet high to the top of the trees, known as **Pointer Islet**, forming a landmark for the entrance of the Lama Passage and the northwestern headland of Fitzhugh Sound. The sound really is continuous for eight miles farther to the northward, but to this part of it is applied the name of **Fisher Channel**,* which afterward divides into two or more arms.

In latitude **52° 04′ N.**, between Hunter Island on the south and Denny Island on the north, marked by a conical mountain one thousand feet high, on the northeastern part of Hunter Island, and at its south point of entrance by Pointer Island, Lama Passage opens from Fitzhugh Sound to the westward, extending to the Seaforth Channel and describing nearly a right angle in its course. From the entrance at the sound it takes a generally **W SW.** direction for seven miles, then, between Campbell Island on the west and Denny Island on the east, **NW.** by **N.** ½ **N.** for five miles, when it again turns to the **N.** by **E.** ½ **E.** for two miles and enters Seaforth Channel. At the first angle **Plumper Channel**, a much obstructed passage, extends toward Hecate Strait, between Hunter and Campbell islands.

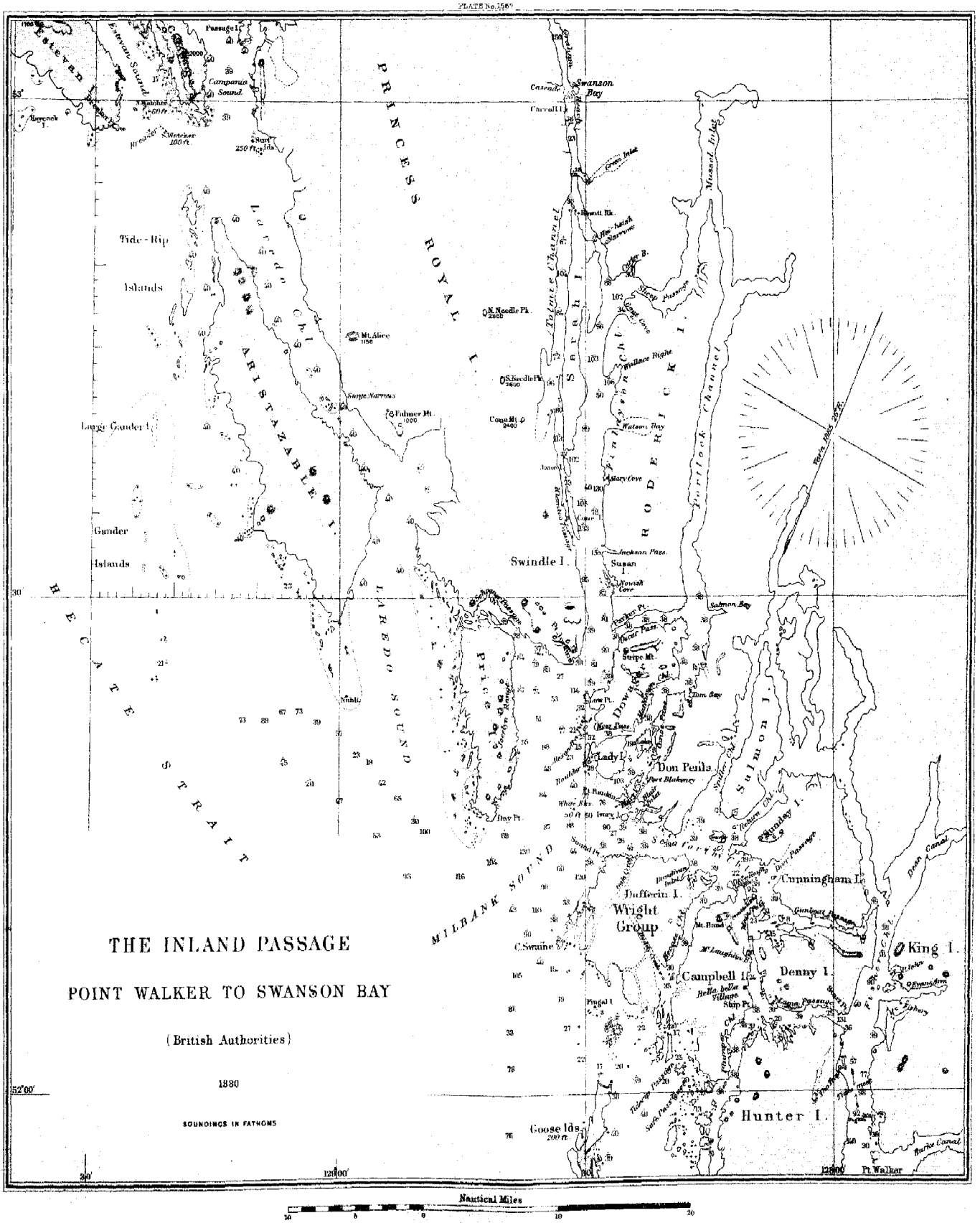
Lama Passage.

The Lama Passage is rather narrow near its eastern entrance, being only half a mile wide, but increases in width to the westward to over a mile. The northern shore appears to be bold-to and but slightly indented; the southern, on the contrary, after the first three miles is penetrated by a large number of narrow indentations, some of which afford shelter. Hereabouts are numerous rocks and islets, though no concealed dangers are indicated.

Cooper Inlet, a name which is taken to cover most of these indentations between Harbormaster Point and Westminster Point as its eastern and western extremes respectively, about five miles westward from the entrance to Lama Passage, is deep and contains several coves and rocks. In fine weather anchorage may be obtained in fourteen fathoms under Westminster Point bearing **W NW.**, with Harbormaster Point just open of the reefs off Charles Point **NE.** by **E.** ¾ **E.**

Cooper Inlet.

* It may be observed that the name of Fisher Channel on different charts is very differently extended, and might profitably be restricted solely to the northwestern arm, the northeastern having been named **Dean Canal** by Vancouver and the remainder being practically identical with Fitzhugh Sound.



THE INLAND PASSAGE

POINT WALKER TO SWANSON BAY

(British Authorities)

1880

SOUNDINGS IN FATHOMS

Jane Creek, in the eastern corner of Cooper Inlet, is protected to the northward by **Charles Point**, off which, in a west-northwesterly direction to a distance of a cable and a half, extend *two reefs*, the outermost of which dries nine feet. From Charles Point, George Point, the opposite headland of the creek, bears south three cables. Large vessels may anchor in eighteen fathoms between the two points, but the bottom is generally rocky. Small vessels may find better anchorage in nine fathoms, with Charles Point in line with the east point of Canoe Bight on the opposite side of the passage bearing **NW.** ¼ **W.**, and George Point **SW.** by **W.** This locality is represented on British Admiralty Chart No. 2449 (to October, 1872.)

The shores of Campbell and Denny islands, bordering on the northern part of the passage, are irregular, with a number of small coves. The passage contracts off the western extreme of Denny Island to less than a quarter of a mile, but widens to the north and south.

From **Start Point**, at the eastern entrance, the passage is clear, with very deep water, shoaling to twenty-five fathoms. About two miles from the point, close in on the southern shore, are some rocks or islets above water with *shoals* in front of them extending off a cable length. Hence to the northwestern extreme of Hunter Island a clear passage along the northern shore exists from half a mile to a mile wide. **Ship Point**, the southeastern extreme of Campbell Island, is backed by a hill three hundred and eighty feet high, abreast of which, extending from Camp Island,* on the Denny shore, are some rocks above water, and one only two feet above low water of spring tides. This part of Denny Island should not be approached to nearer than half a mile.

Hence the clear channel hugs the Campbell Island shore **N NW.** about three miles to McLaughlin Bay, a small cove indenting Campbell Island a couple of cables, and three and a half cables in extent **N NW.** and **S SE.** The shores are rocky except at the southwestern corner of the bay, where a small stream comes in. There is a bare hill two hundred feet high to the westward of the anchorage. The soundings in the passage off the bar vary from twenty to thirty fathoms. Within the bay they are somewhat irregular, varying from seven to sixteen fathoms. A small rocky platform in the northern portion of the bay, separated from the shore at high water, was the British astronomical station, and is stated to be in **McLaughlin Bay.**

Latitude	52° 08′ 37″ **N.**
Longitude	128° 10′ 18″ **W.**

It is **H. W. F.** and **C.** at $1^h\ 0^m$; springs rise fourteen and neaps ten feet.

The best place for anchoring appears to be **SE.** two cables from the Observation rock, in ten or twelve fathoms, sandy mud. British authorities recommend a spot off the middle of the beach about a cable from the shore, with Grave Point open east of the southwest point of Narrows Island bearing **N.** ¼ **W.**, and Archibald Point open east of Napier Point **SE.** by **E.**

This bay in former times was the site of a Hudson Bay Company's post, which was re-established here in 1868, when the Bella Bella Indians migrated from the Bella Bella Islands to this locality, which is now the only winter residence of Indians within a considerable area adjacent.

This once formidable tribe now numbers scarcely fifty individuals. From their residence here the place is generally known to traders and coasters as Bella Bella. The village contains about twenty Indian houses, a mission residence and church. The hills around the bay have been partially cleared and are now pasture for cattle. The Indian name of the place is Wau-ko-has.

W NW. from McLaughlin Bay are several peaks over a thousand feet in height, one of them, Mt. Hand, according to British authorities, being four thousand one hundred and sixty-four feet high. The bay is represented on British Admiralty Chart No. 1901.

A rock has been reported on Indian authority to exist in Lama Passage opposite McLaughlin Bay, and about half a cable from the eastern shore, with Napier Point bearing **S SE.** six cables distant. This, if correctly located, could be avoided by keeping in mid-channel or a little to westward of mid-channel. Later reports indicate that its location here is due to a misunderstanding, the Indians now saying that no rock exists there, but that the one intended is four miles farther north. It has been searched for by H. M. S. *Rocket*, the U. S. C. S. S. *Hassler*, and the Hudson Bay Company's agent and only deep water found in its supposed location. ***Rock.***

Six cables north of the anchorage at McLaughlin Bay lies Grave Point on Denny Island, marked by some old Indian graves. Here Lama Passage is only two cables wide but free of dangers. A mile northward from Grave Point, near the northwest extreme of Denny Island and on the east side of the passage, are the **Bella Bella Islands**, bare and about fifteen feet high, formerly inhabited in summer by the Indians of that name, who also had a winter residence on a green bushy flat on the Denny Island shore, east from Bella Bella Island, off which temporary anchorage may be had.

Klik-tso-at-li Harbor, a mile and a half to the eastward of Bella Bella Islands, on the north side of Denny Island, is about half a mile in extent with depth of from nine to thirteen fathoms, and affords excellent shelter for vessels of any size. Harbor Island, off its northwest headland, has *a reef* extending a cable from its eastern end. The passage southwest from Harbor Island has a width of a cable

* Called Camp Point by Pender, *l. c.*, p. 14.

and a depth of seven fathoms. The west extreme of Cypress Island in line with the east extreme of Meadow Island bearing **NW.** by **N.** ¼ **N.** leads through Wheelock Pass east from Harbor Island, which is recommended for large vessels, which may anchor in twelve fathoms when Harbor Island bears west.

Large vessels not wishing to enter may anchor safely in fifteen fathoms, with Harbor Island bearing **SE.** by **S.** ¾ **S.** three cables distant. This bay is represented on British Admiralty Chart No. 1901.

At the northern termination of Lama Passage, where it meets Seaforth Channel, it becomes considerably widened and obstructed by islands and rocks. The main passage for vessels passes to the westward of all these. The northern shore of Denny Island is penetrated by several indentations, some of which afford shelter. To the eastward **Gunboat Passage,** a narrow, crooked and obstructed channel, about seven miles long, connects the head of Seaforth Channel with Fisher Channel. It should not be attempted unless in small handy steam coasting vessels with good local knowledge.

SEAFORTH CHANNEL.

Seaforth Channel extends in a westerly direction from Denny Island to Milbank Sound, between Denny, Campbell and the Wright group of islands on the south, and on the north **Meares,*** Sunday and Salmon islands, and a prolongation of the mainland on the Admiralty charts called Don Island, though not insulated. The channel has an average width of somewhat over a mile, and is a mile in width at its narrowest part. Its shores are very irregular. Deer Passage, Return and Spiller channels extend from it toward the north, and Hecate Channel, between Campbell Island and Hergest Island, of the Wright group, to the south, of which channels only the last has been fully explored. The depth of water in Seaforth Channel in general exceeds thirty-nine fathoms, but the shores appear to bristle with rocks and islets and should not be closely approached without great caution. In latitude 52° 12′, on the northern end of Campbell Island among numerous indentations two are indicated as harbors.

Caution.

Ormidale Harbor is triangular in shape, widest at the mouth, which is sheltered by Nevay and Thorburne islands, westward from the first of which is a narrow but navigable channel. Thorburne Island, the easternmost of the two, is separated from Campbell and Nevay islands by narrow and shoal passages. The navigable entrance lies **SW.** ¾ **S.** nearly a mile from **Grassy Island,** twenty feet high, lying in the middle of Seaforth Channel and forming a fair landmark. The entrance is a cable and a half in width, with not less than thirteen fathoms; a strictly mid-channel course in appears free from dangers. Once within, anchorage may be had two cables **S SE.** from Nevay Island in about seventeen fathoms, sandy mud. The passage in is longer, but the berth more commodious than in Kynumpt Harbor, directly west of this one.

Ormidale Harbor.

SAILING DIRECTIONS

FOR AVOIDING DALL PATCH SHOAL.

In leaving Ormidale Harbor, bound north, the navigator should keep within two cables of Defeat Point until Angle Point, on the northern shore of Seaforth Channel, bears nothing to the westward of **NW.** ½ **W.** to clear the *Dall Patch Shoal,* or a **NW.** by **N.** ½ **N.** course may be kept until Grassy Island bears **E.** when a **W.** course clears all dangers.

To pass to northward of the patch Grassy Islet in line with south extreme of Handyside Island bearing **E.** ¾ **N.** leads nearly midway between Dall Patch and Regatta Rocks.

This vicinity is well shown on British Admiralty Chart No. 2449,† dated October, 1872.

Immediately to the westward of this harbor lies Kynumpt Harbor. This harbor penetrates Campbell Island to the extent of half a mile in a **S SE.** direction from the entrance, which is a quarter of a mile wide, but the harbor narrows to a cable length at its head. The western headland is marked by Whitestone Rock, a conspicuous bare rock two cables off and twelve feet above high water, and is called **Shelf Point,** from which the land rises to two hundred feet. The opposite headland, two hundred feet high, is known as **Defeat Point.** A quarter of a mile **N.** ½ **E.** from Defeat Point and **NE.** by **E.** from Whitestone, nearly in mid-channel, lies the centre of *Dall Patch, a six foot shoal* with *a sunken rock* at either end, with a three fathom shoal extending a cable and a quarter westward from it, and in all about a cable and a half in length in an **E.** and **W.** direction.

Kynumpt Harbor.

Dall Patch.

At the southern angle of Defeat Point, **Low Island,** a rocky islet, is connected by *a reef* with the shore, and **S.,** about a cable from it, is **Berry Point,** two hundred feet high,—the astronomical station being at its **SW.** angle. The cove between them has shoal water on its southern shore,—a three fathom bank extending about eighty yards **N.** by **W.** from Berry Point. There are shoals near the head of the harbor, and the five fathom line from the western shore extends nearly half-way toward Berry

* Here named for John Meares, who visited this coast on a trading voyage in 1788, and published maps and an account of the voyage.

† For tides hereabouts see Kynumpt Harbor.

Point. Good anchorage may be obtained here in mid-channel, Berry Point bearing **E.**, in a muddy bottom and eight fathoms water, but with only two hundred yards between the vessel and the shore on either hand.

This harbor is represented on British Admiralty Charts Nos. 2449 and 1901. On the latter Berry Point is stated to be in

Latitude ..... **52° 12′ 20″ N.**
Longitude ..... **128° 11′ 37″ W.***

It is **H. W. F.** and **C.** at $0^h\ 30^m$,—springs rising fourteen and neaps eleven feet.

No directions are necessary for entering it except to avoid *Dall Patch Shoal,* which is marked by kelp and lies four cables **NE.** by **N.** from the middle of the entrance.

NE. ¾ N. about a mile from the entrance lie *Regatta Rocks,* awash at high water. **Grassy Island,** twenty feet high, with two fir trees on its western end, holds a similar relation to the entrance of Ormidale Harbor. This islet may serve as a guide to the entrances of these harbors. It bears **NE.** by **E. ¼ E.** from the middle of Kynumpt entrance.

Kynumpt Harbor is separated from Wood Bay to the southwest of it by a peninsula with a narrow neck less than a cable wide. The bay has from twenty-five to fifty fathoms in it.

Immediately to the westward of Campbell Island, and separating it from Hergest† Island of the Wright group, which is unexplored to the south and west, is **Hecate Channel,** a passage about a mile wide and eleven miles long **N.** and **S.,** leading toward Queen Sound, and considerably obstructed at the southern end by islets and rocks. The **NE.** point of Hergest Island is known as **Point George,** bold-to, with land behind it rising a thousand feet. **W. ½ S.** from Point George, two miles, is the entrance to **Dundivan Inlet,** an irregularly-shaped bay with a number of arms, affording anchorage. The inlet contains a number of islets, and has over thirty-eight fathoms in the entrance and twelve to thirty inside. Beyond this inlet, and three miles to the westward of Point George, is **Idol Point,** bold-to, with high land behind it. **SW. by W. ¾ W.** from this point the shore of Hergest Island extends about three miles and a half to the obstructed entrance of Gale Creek, which is supposed to extend in a southerly direction, meeting Boddy Creek from the **SE.,** and thus to separate Hergest Island from the rest of the Wright group. The shore extends in the same direction from the entrance of Gale Creek, **SW. by W. ¾ W.,** two and a half miles, to Sound Point, Milbank Sound, mostly compact and fringed with rocks, and should not be approached within half a mile anywhere westward from Idol Point.

According to Pender, from Gale Creek west for a mile and a half *reefs* with nine fathoms close-to extend about three cables from the shore, and with careful use of the lead temporary anchorage may be obtained on this bank in foggy weather. It is obvious, however, that such proceedings cannot be recommended except in an unusual emergency. Gale Creek, which is an unnavigable, inconsiderable inlet, is the only marked indentation of this strip of shore line.

The northern shores of Seaforth Channel are much more irregular in outline. Separating Sunday and Meares islands, directly **NW.** from Point Dumas, is the entrance of **Deer Passage,** a large and unexplored opening with several islands in it; and to the westward there are several islets along the shores. The western extreme of Sunday Island is **Angle Point,** a narrow, high promontory, nearly four miles **W. ½ N.** from Point Dumas. Three-quarters of a mile west of this promontory are the **Jumble and Dearth islands,** separated from Salmon Island north of them by a strait about a mile wide. From this expansion of Seaforth Channel, **Return and Spiller** channels, two large arms, extend to the northward, encircling Salmon Island on the east and west respectively, and connected with a multitude of unexplored channels. North from Idol Point nearly two miles, between the western point of Dearth Island and the southern angle of the mainland to the westward of it, are numerous sunken rocks known as the *Hyndman Reefs.* The mainland, (under the name of Don Island,) forming the northern shore of Seaforth Channel, from this vicinity to Milbank Sound is surprisingly irregular, fringed with islets and rocks, most of which are visible, and should not be approached within half a mile.

Sunken Rocks.

The waters of the channel offer no unseen obstacles to navigation except *Dall Patch, Regatta Rocks,* and those in the vicinity of the shores. There is a clear passage on either side of the mid-channel islets in the eastern part. The shores are wooded and mostly low, and the high land does not attain such an altitude as near the more interior passages. There are numerous Indians resident in this vicinity.

Sound Point, the northwestern extreme of the Wright group, is indicated as in

Latitude ..... **52° 14′ 20″ N.**
Longitude ..... **128° 27′ 45″ W.**

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*Taking Shell Island, Beaver Harbor, to be in longitude 127° 25′ 07″ W.

†Here named for Lieutenant Hergest, commander of Vancouver's supply ship *Daedalus,* who was murdered in the Sandwich Islands in 1792.

It is low and marked by an islet. Three and two-fifths miles N. ⅔ W. from this point lies **Point Rankin**, the northwestern extreme of Seaforth Channel, separating the latter from the entrance to Mathieson Channel.

MATHIESON CHANNEL

separates Lady and Dowager islands from the mainland, (Don Island.) The channel is some thirteen miles long in a northerly and southerly direction and averages over a mile in width. About three miles northward and eastward from Point Rankin is the entrance to Port Blakeney, a rather contracted anchorage between Mary Island, on which Point Rankin is situated, and that part of the mainland called Don "Island." This and its approaches is exhibited by a plan on British Admiralty Chart No. 1462, of December, 1872, on which it is stated that the observation spot, Port Blakeney, is in

Port Blakeney.

Latitude	**52° 18′ 47″ N.**
Longitude	**128° 22′ 42″ W.**

H. W. F. and C. is reported at 0h 0m, with a spring rise of thirteen and a neap rise of eight feet. The range of the neaps is from two to four feet.

About four miles northward from Point Rankin and westward from Lake Island, in Mathieson Channel, is the entrance of **Moss Passage**, extending thence in a west-southwesterly direction about four miles, to Milbank Sound. The eastern part of this passage is very contracted and cannot be recommended. The western part will average half a mile in width, and contains, on its **SE.** shore, Morris Bay, a small indentation of Lady Island, affording anchorage except in westerly winds. It is of small extent, with stony bottom and ten to sixteen fathoms. It is represented on the same plan with Port Blakeney, British Admiralty Chart No. 1462, and the tidal memoranda are the same.

Morris Bay.

The variation of the compass was **25° 20′ E.** in 1872, and the position of the anchorage is given as

Latitude	**52° 21′ 00″ N.**
Longitude	**128° 28′ 30″ W.**

DANGER.

S. ¼ E. from Point Rankin nearly one mile, and **W.** by **S. ½ S.** from Ivory Island, a quarter of a mile off Rat Rock, lies *Mouse Rock*, showing a breaker, which should be avoided in entering the Seaforth Channel from the northwest. On this account vessels wishing to enter the channel should not approach Ivory Island within one mile until its southern edge bears to the northwerd of **E NE.**

The western entrance of Seaforth Channel opens on

MILBANK SOUND,

(named by Duncan in 1788,) a sheet of water comprehended between the Wright group and the main land to the eastward, Lady and Dowager islands to the northward, and Price and Swindle islands to the northwest and west. It is over eight miles wide **E.** and **W.**, opening into Seaforth, Mathieson and Finlayson channels to the eastward and northward, and fronting on Hecate Strait to the south by an opening nearly eight miles wide. The southeastern headland, formed by islets on the extreme of the Wright group, is Cape Swaine, of Vancouver,* from which **Point Day**, the northwestern headland, bears **NW. by W. ½ W.** about nine miles. **SSW.** from Point Day rocks and islets extend for two miles. **SW. by W. ½ W.**, a little over three miles from Point Rankin, is a *sunken rock*, which breaks in bad weather, and immediately westward from it are the White Rocks, two islets, of which the northern one is six feet high and called Bare Rock, while **S. by W.**, about half a mile from it, is the larger White Rock, some fifty feet in height.

Cape Swaine.

White Rocks.

NW. by W. ¼ W. from Point Rankin about two miles is **Point Cross**, on Lady Island, the western headland of the entrance to Mathieson Channel, off which rocks extend **SSW.** about a mile. Three miles from Point Cross, and about **N NW.** four miles from the dry White Rock, lies *Vancouver Rock*, awash.

DANGERS.

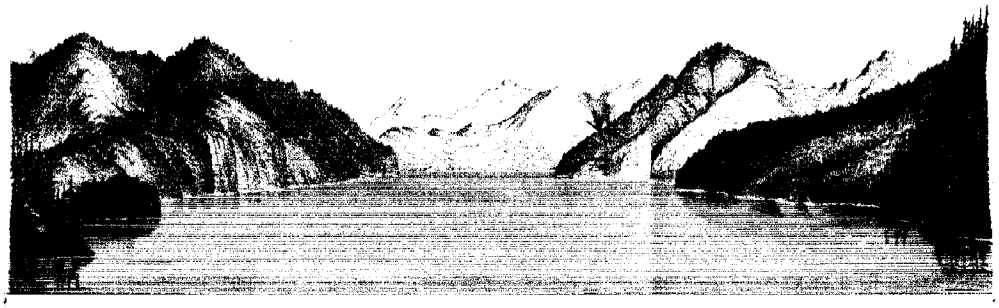
Eastward from this line the SW. shores of Lady and Dowager islands are infested by a multitude of rocks and islets. These shores should not be approached within a mile and a half in foggy weather.

* Incorrectly spelled **Swain** on the Admiralty charts.



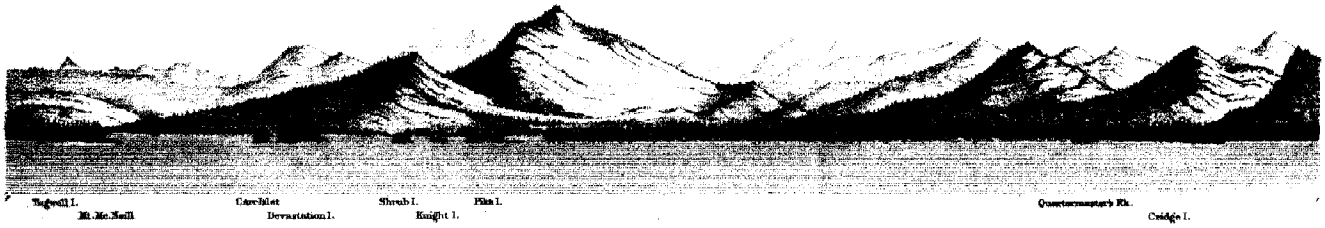
Entrance to Coghlan Anchorage. Thom Pt. S E ¼ E.

(From British Adm. Chart No. 2120)



Finlayson Channel B. C. looking South from Carter Bay

(From a Sketch by Geo. Davidson, Assist. U.S.C. & G.S. 1887)



Entrance to Metlakatla Bay, Knight I. N.N.E.¼ E.

(From British Adm. Chart No. 364, 1872)

In clear weather local pilots use the Alexandra Passage between the outer rocks and the shore east from them. It is stated that there is a good clear passage and no known dangers not shown on the latest charts. It should not be attempted without local knowledge or a pilot.

H.E.P.A local pilot is not needed for this passage

SAILING DIRECTIONS

FOR MILBANK SOUND.

I. ***From the Eastward.***—On leaving Seaforth Channel the navigator should keep in mid-channel until Sound Point bears **SE.** by **S.** ½ **S.**, to avoid the rocks near Ivory Island. A clear passage exists on either side of the White Rocks, but the one usually taken is that to the northward,—not approaching them within a mile. From a position in mid-channel, between Ivory Island and Sound Point, the course is **W NW.** seven miles, when a due north course will carry clear of all dangers into Finlayson Channel, in mid-channel. This course leads about a mile to the northward and eastward of the White Rocks. The southwestern shores of the Wright group are almost unknown and should not be approached within a mile. No information is at hand in regard to the currents of this vicinity, against the effect of which the navigator should be on his guard, especially in foggy weather.

The variation of the compass is stated to have been **26° 10′ E.** in 1868.

II. ***From the Northward.***—From a position in mid-channel, with North Islet bearing **E NE.** two and a quarter miles, the course is **SE.** by **E.** ¼ **E.**, eight miles, for the entrance of Seaforth Channel, passing a mile to the northward of the reef near the White Rocks.

An obstructed channel, called **Schooner Passage**, leads to the **W NW.** from the northern part of Milbank Sound, cutting off Price from Swindle Island, and directly to the eastward from this entrance lies **Point Jorkins**, the northwestern headland of the entrance to Finlayson Channel.

The land upon which Point Jorkins is situated is known as Swindle Island, (though several islands may be included in it,) and forms a portion of the western shores of Finlayson Channel.

FINLAYSON CHANNEL

extends between Dowager and Roderick islands on the east and Princess Royal Islands on the west, twenty-four miles, in a generally **N NW.** direction from its entrance to Carter Bay. The name might, without detriment, be held to cover that portion of the same channel extending from the vicinity of Carter Bay to Point Kingcome, a distance of some thirty miles more, after which it takes a sharp bend to the **W SW.**

The first portion of the channel averages two miles in width, with more than one hundred fathoms of water. The shores are bold-to, clear of dangers, and only in two localities are there any rocks or islets in the channel, and these are insignificant. The shores are densely wooded, the timber extending to the height of fifteen hundred feet on the mountain sides, while the peaks, closely approaching the shores of the channel, rise in a precipitous manner to the height of nearly three thousand feet on either hand, with higher mountains beyond them.

Patches of snow in the ravines are reported in August, and probably exist throughout the year. From these and from various lakes at a high altitude cascades of remarkable height and beauty fall down the abrupt mountain flanks, and in some cases swarm with salmon in their season, affording a bountiful supply of food to the Indians of this region. The tides in this part of the channel are little known, but the flood runs to the northward with a force at times of several knots. The least water reported in this part of the channel is forty fathoms, rocky bottom, and in many places the depth is over a hundred fathoms.

From the southern entrance of the channel **Stripe Mountain** is visible on the northwestern angle of Dowager Island—high, pyramidal, and marked down its southern flank by a great white streak destitute of timber and soil.* It is otherwise wooded to the summit, and this streak forms a very prominent and distinctive mark. At its base is a comparatively level plateau, probably due to glacial action, sparsely covered with herbage, and remarkable in this region of forests for its absence of timber. The mountain is about two thousand and twenty feet high, with still higher peaks to the southward. Its position, according to English authorities, is

Latitude ..... **52° 26′ 40″ N.**
Longitude ..... **128° 25′ 00″ W.**

Its peak is less than a mile from the water, and northward from it **Oscar Passage** leads from Finlayson to the northern entrance of Mathieson Channel. In the bight called **Open Bay**, between the point **W SW.** from the peak of this mountain and **Low Point**, the eastern headland of the entrance

* It was called **Quartz Mountain** by the U. S. Coast Survey in 1869.

to Finlayson Channel, are some rocks and islets extending two-thirds of a mile off shore, with deep water near them. Oscar Passage, above mentioned, separates Dowager Island from

Roderick Island. Roderick Island,—a mass of land which may prove to consist of several islands, separated from the main by Portlock * Channel. Over three miles **NW.** ¼ **N.** from Parker Point, the southern point of Roderick Island, in Finlayson Channel, are two islets called The Sisters, ninety feet high, connected by rocks.

Northeastward from them about two and a half cables is **Indian Island,** of irregular form, nearly a mile in length **W NW.** and **E SE.**, and sheltering the entrance to Nowish Cove, an indentation of Susan Island forming part of the Roderick group. This is a snug but contracted

Nowish Cove. cove about a cable and a half in extent, with anchorage in fourteen fathoms. It is entered by a passage between Indian and Susan islands, about four cables long **E.** by **S.** ½ **S.** and **W.** by **N.** ½ **N.**, diminishing from two and a half cables at its mouth to less than one cable just before reaching **Fell Point,** the western point of entrance of the cove. The depth of water in the entrance varies from five to forty or more fathoms. It is clear of obstructions. There are no concealed dangers, and no directions seem necessary for entering it. Half a mile northward from the cove a peak rises to about fourteen hundred and twenty-five feet. Fell Point is stated to be approximately in

Latitude	52° 31′ 25″ **N.**
Longitude	128° 27′ 15″ **W.**

It is **H. W. F.** and **C.** at $0^h\ 0^m$, and spring tides rise twelve feet.

This cove is represented by a plan on British Admiralty Chart No. 1462, dated to December, 1872.

Hence northward the shore has been only superficially examined for fifteen miles, and in this stretch are the entrances to several unexplored bays, inlets, or passages. In about

Mary Cove. latitude 52° 37′ **N.**, on the eastern side of the channel, is the entrance to Mary Cove, of small extent, with nine fathoms water and good protection except from the southward.

The western shore of Finlayson Channel northward from Point Jorkins is compact and bold-to, rising to nearly two thousand feet within a short distance of the passage. About seven miles northward from the point is a narrow entrance between the shore of Swindle Island and

Cone Island. the southern termination of Cone Island, which forms a narrow conspicuous promontory. The island derives its name from **Bell Peak,** a peculiar conical mountain, which is situated on the island in latitude 52° 34′ ¼ **N.**, about a mile northward from the point, and which attains a height of twelve hundred and eighty feet.†

Cone Island extends somewhat more than three and a half miles in a **NW.** and **SE.** direction with a width of about half a mile, and between it and Swindle Island is an exceedingly narrow passage, having eight to thirty fathoms water, and known as Klemtoo Passage. This passage

Klemtoo Passage. possesses the advantage of affording anchorage almost anywhere, and in it the strength of the tide does not appear to exceed a knot an hour at any time. Klemtoo Passage extends parallel with Cone Island for three and a half miles in a **NW.** and **SE.** direction. The shores of Cone Island appear bold-to. Within a reasonable distance no dangers are indicated. The opposite shores of Swindle Island are, on the contrary, considerably indented with coves of small extent and bordered for some distance by islets. Navigators will do well to keep within three-quarters of a cable of the Cone Island shore, unless intending to anchor on the western side.

The clear passage seems to be almost exactly one cable in least width, and the average width is about a cable and a half. The southern points of entrance to the passage are **Bare Point,** the southeastern extreme of Cone Island, having a rock at its base and represented as bold-to, and **Islet Point, W.** by **S.** about four cables from the former. This consists of some small rocky islets connected by reefs with a small promontory, high, parallel with Swindle Island, with which it is connected by low land, and having a cove with a sandy beach **SW.** from its northwestern and another **W.** from its southeastern extreme.

In line with and **NW.** from the ridge forming this promontory, and between it and **Base Point,** of the Swindle Island shore, a distance of a mile, is a line of *islets and reefs.* In the openings between them are several anchorages. The southernmost islet is Fish Island, about two cables

Fish Island. long **NW.** and **SE.**, somewhat over half a cable wide, and having *a two and a half fathom shoal* extending nearly half a cable **NW.** from its northwestern extreme. **W NW.** from the latter, just outside of the shoal, boat anchorage may be had in seven to nine fathoms, sand and shells. The place is, however, very contracted, with hardly room to swing.

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* Here named for Captain Nathaniel Portlock, who visited this coast on a trading voyage in 1787 and published maps and an account of his voyage.

† It is **Cone Point** of the earlier Admiralty Charts, and probably the "**Cocked Hat**" of the U. S. Coast Survey party of 1867. The island is sometimes called **Bellcone Island.** On later charts a **Cone Mountain** appears west of Tolmie Channel, which is a different peak.

A cable and a half **NW.** from the **NW.** end of Fish Island is **Needle Rock**, beyond which is Stockade Islet, with other islets or rocks forming a chain which terminates with the northwestern end of Star Island, six cables from the **NW.** end of Fish Island. This is fringed for half a cable with kelp, in which are *some rocks.*

At the northern extreme of Star Island, and connected by rocks with it at low water, is Observation Islet, an insignificant rock, situated in

Latitude ..... **52° 34′ 22″ N.**
Longitude ..... **128° 32′ 09″ W.**

TIDES.

Here it is **H. W. F.** and **C.** at $0^h\ 0^m$; spring tides rise thirteen and neap tides eight feet, but the range of neap tides is stated to be only about three and a half feet.

NW. from this islet a cable and a half is Clothes Bay, a cove affording boat anchorage in five fathoms. In the channel abreast of this bay vessels may anchor in twelve to fifteen fathoms, shelly bottom. A run of fresh water is found on the Cone Island shore conveniently near this anchorage. **Clothes Bay.**

A mile **NW.** by **N.** from Base Point is **Berry Point**, the rather high, rocky, southeastern headland to the entrance of Trout Bay, a cove of moderate extent, sandy or muddy shores, and affording six to eleven fathoms near the entrance. Two streams fall into this cove. Six cables **N NW.** from Berry Point lies **Legge Point**, on the Cone Island side, whence to **Wedge Point**, the northwestern extreme of Cone Island, is about six cables in a **N NW.** direction. **Trout Bay.**
On the northern side of Wedge Point, close in, is a rocky islet, and the shore about the point is fringed with kelp, extending off less than half a cable.

The northern entrance of Klemtoo Passage at this point is about two cables wide. Half a mile **N NW.** from Wedge Point lies **Jane Island**, a mile long **NW.** and **SE.** and less than half a mile wide. It is separated from Cone Island by a passage having eleven to forty fathoms water and half a mile wide called **South Passage.** Between Jane Island and the land westward from it the furrow of Klemtoo Passage is continued, widened to a third of a mile and deepened to over forty fathoms.

At the southern extreme of the island, just within the South Passage, is *a kelp patch*, extending a cable from shore, and marking *a sunken rock.* Berry Point, open from Legge Point, and bearing **SE.** by **S.** ½ **S.**, leads clear of this obstruction if South Passage be entered only within three and a half cables of Wedge Point. In **North Passage**, at the northern end of Jane Island, *a similar danger* exists, marked by kelp, and within a cable and a half of the Jane Island shore. ***Sunken Rock.*** This passage is half a mile wide, with deep water, in which whirls are sometimes caused by the tide. It is bounded on the north by the southern end of Sarah Island, which extends some fifteen miles to the **N NW.**, with a greatest width of two and a half miles, rising in peaks from fifteen hundred to two thousand feet in height.

TOLMIE CHANNEL.

Between Sarah Island and the shore to the westward, parallel with the island, is the commodious though narrow Tolmie Channel, which reunites with the northern extension of Finlayson Channel somewhat more than a mile beyond the point where the latter is obstructed by the dangerous *Hewitt Rock.* Tolmie Channel averages about a mile in width, with very deep water, forming a virtual continuation of the depression known as Klemtoo Passage, without serious obstructions, and apparently preferable for navigation to the northern part of Finlayson Channel. Three or four miles northward from its southern entrance are unsurveyed openings on its western side, apparently leading toward Laredo Channel.

TIDES.

Hereabouts the establishment is $0^h\ 0^m$, the flood to the northward, the ebb running out an hour and a half after slack water in Finlayson Channel.

Less than half a mile southward from the northern extreme of Sarah Island, close in under the eastern shore in Tolmie Channel, a *sunken rock* is marked on British Admiralty Chart No. 1923, which is really a small wooded islet standing well out from the shore and no sunken rock is known in this passage.

From Mary Cove northward for twelve miles, to the entrance of the narrow part of Finlayson Channel, the eastern shore has been but partly examined. There is one large opening, provisionally called **Watson Bay**, and several streams fall in from the sides of the mountains. At the northwestern corner of Roderick Island are a couple of small indentations. The southern of these is **Goat Cove**, a quarter of a mile in extent, with twenty-three fathoms water and a lagoon at its head; high land north and south of it. The northern indentation is **Kid Bay**, three cables in extent, with twenty-three and

twenty-five fathoms water, surrounded by high land, with a stream falling in at its head. Around Fawn Point, the northern headland of this cove, is Sheep Passage, separating Rod-

Sheep Passage.

erick Island from the mainland and joining Portlock Channel at the entrance of Mussel Inlet, eight miles to the northward.

A mile from Fawn Point **NW.** is situated the entrance of Carter Bay,* on the shore of the mainland. This bay opens to the southward and trends in a general **N.** and **S.** direction

Carter Bay.

for seven cables with an average width of three and a half cables. The shores are bold-to and free from dangers; a stream flowing by a cascade from a lake to the northward and eastward, forms a small bank at the head of the bay. The eastern shore is straight, trending **N.** by **W.** $\frac{3}{4}$ **W.**, and conversely. The western shore is less regular, and the

Astronomical Station.

astronomical station of the English observers was situated on a small point near the northwestern angle of the bay. The mountains rise to more than two thousand feet on either hand. The soundings off the entrance are deep, exceeding thirty-eight fathoms; the water in general is deeper toward the western shore. About four cables from the head the bottom begins to rise with some rapidity from thirty to eighteen and then to thirteen fathoms. The best anchorage is had in the middle of the bay, about two cables from either shore, in fifteen fathoms, muddy bottom. The edge of land to westward will then bear **SW.** by **S.** $\frac{1}{3}$ **S.** and to eastward **SE.** $\frac{2}{3}$ **S.** Three fathoms can be carried to the edge of the flat, and ten fathoms close to the shore on either hand. There are no dangers of any kind; no directions are necessary for entering, and it forms one of the most convenient anchoring places in the whole Inland Passage. The stream abounds with trout; clams are found on the flat at low water; wood and fresh water are easily obtained.

This bay is represented on British Admiralty Chart No. 1901, from which it appears that the astronomical station is in

Latitude	**52° 49′ 41″ N.**
Longitude	**128° 24′ 34″ W.**

The variation of the compass in 1868 was **26° 20′ E.**

The passage leading to the northwest, westward from Carter Bay, for about twenty miles, is denominated by English authorities Graham Reach and Hiehish Narrows.† The width here diminishes to less than a mile, with very precipitous shores. The narrows connect Finlayson

Graham Reach.

Channel with the Reach, and are about five and a half miles long **NW.** by **W.** and **SE.** by **E.**, and half a mile wide. Some incongruities appear in the different accounts of this passage, as will be seen.

Vancouver states that at a distance of four miles from the entrance, **N. 55° W.** (true), the channel having narrowed to a fourth of a mile, the *Chatham* suddenly found only six fathoms

Rock reported by Vancouver.

water on *a shoal* stretching from the continental shore into mid-channel, which he passed on the western side in eighteen and twenty fathoms water. This, the narrowest part of the channel, was made so by a high, round, projecting part of the southwestern shore, appearing like an island. An island is indicated at this point on his chart.

By British Admiralty Chart No. 1923, corrected to December, 1874, it appears that five miles **N. 51° W.** from the entrance, a slight distance from mid-channel, toward the western shore, is the

Hewitt Rock.

Hewitt Rock, with eight feet on it at low water, to the westward of which, close to the shore of Sarah Island, is an island. The direction given by the chart for this locality is *to keep the northern shore aboard.* At this point, according to the report of Assistant George Davidson, U. S. Coast Survey, "the passage is contracted and the depth of water shoals to a few fathoms." The Admiralty Chart, however, gives thirty-one and forty-five fathoms close to the rock. The U. S. Coast Survey Steamer *Hassler*, in 1881, sounded in this vicinity, and Lieut. Com. H. E. Nichols, U. S. N., commanding, reports that when the landslide on the east shore was abeam, at high water of spring tide, (Aug. 8, 11.30 a. m.), eleven and three-quarter fathoms, rocky bottom, was obtained, equal to about nine fathoms at low water. No bottom at fifteen fathoms was obtained immediately before and after this cast. Strong tide-rips and eddies were observed in this vicinity. Vancouver's "rock" was probably this same ridge of which *Hewitt Rock* is the highest known peak, and lies on a line joining the landslide and the southern end of the small island.

A mile **W NW.** from Hewitt Rock is the northern entrance of Tolmie Channel. **N NW** two miles from the northern point of Sarah Island, on the continental shore, is an unsurveyed opening denominated Green Inlet. In the vicinity of latitude **53° N.** the width of the passage is a little less than two-fifths of a mile. About two miles to the southward of the entrance to Swanson Bay thirty-eight fathoms are reported, six and a half miles to the northward from Hewitt Rock.

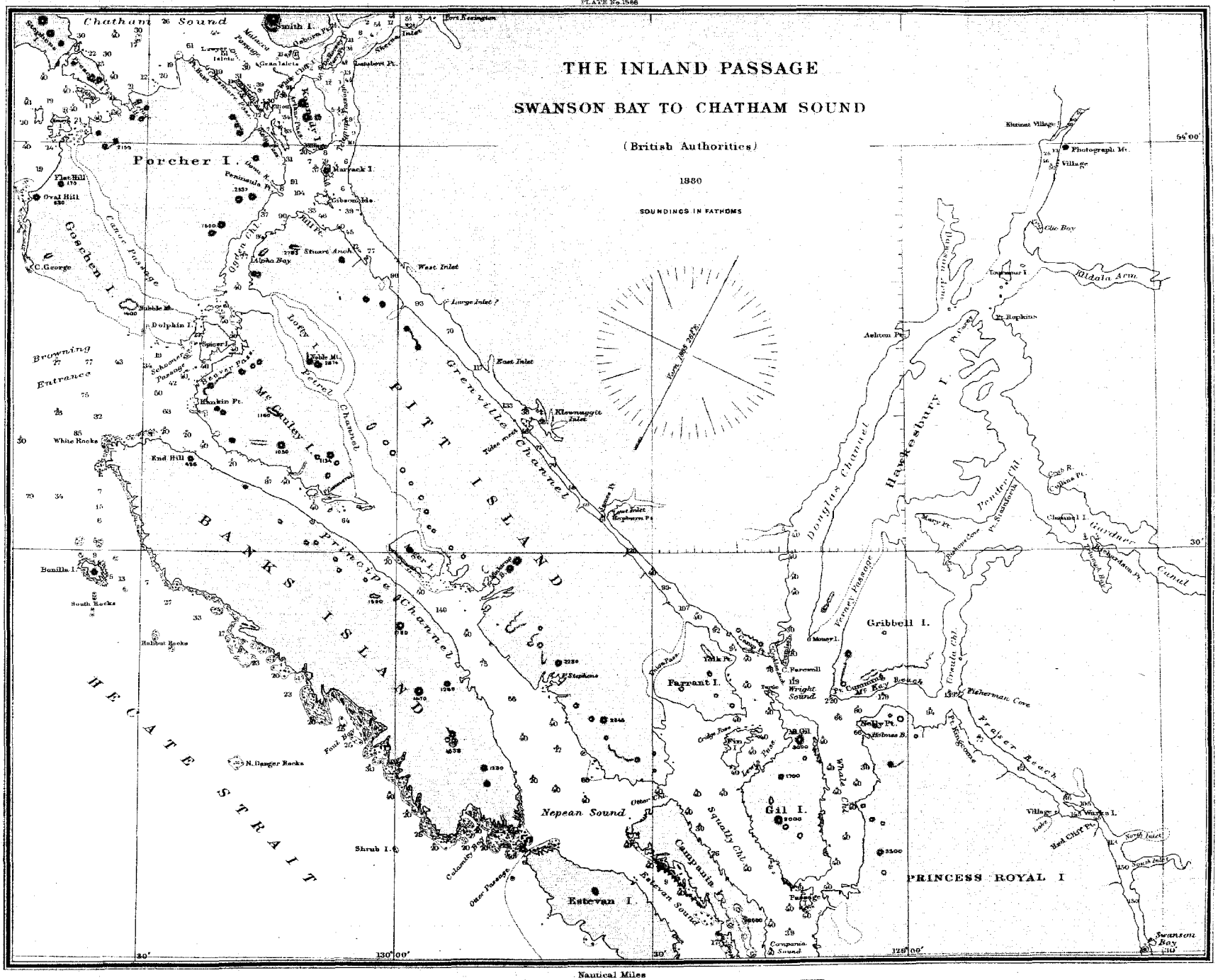
A mile northward from this, close on the western shore, is Carroll Islet, a small low islet not on the chart, and discovered by Captain Carroll of the steamer *California* in May, 1880.

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* Named by Vancouver for one of his crew, who died from eating poisonous mussels, and was buried here June 15, 1793.

† Misepelled **Hielish** on British Admiralty Chart No. 1923.

PLATE No.1566



On the continental shore, in latitude **53° 01′ N.**, is situated as insignificant cove, named **Swanson Bay**, with forty-four fathoms in the entrance and anchorage in the northern corner in nineteen fathoms. Hereabout the passage is walled in by lofty mountains ranging from two to four thousand feet in height, with bold rocky shores, and carries, in most cases, over one hundred fathoms of water.

Six miles **NW.** from Swanson Bay is an opening, called South Inlet, still unexplored, on the continental shore, and separated from another to the northward, called North Inlet, by a peninsula about two miles wide, rising to the height of two thousand feet. Both these are supposed to afford anchorage.* Off the second opening soundings in one hundred and thirteen fathoms, sand and gravel, are reported, and a note on British Admiralty Chart No. 1923A, corrected to December, 1874, states that here the "*tides meet,*"—the flood from the southward meeting that from the region of Wright Sound. **North and South Inlets.**

Northward ten miles from Swanson Bay, on the shore of Princess Royal Island, here forming the western boundary of the passage, is **Red Cliff Point**, off which the soundings shoal to forty-five fathoms, sand, and the passage, three-fifths of a mile wide, suddenly expands to a mile and a half, with mountains rising three thousand feet on either hand. A lake sends a large stream into the southern bight of this expansion, where there is a salmon fishery and Indian summer village, and an unexplored bay puts in on the northern side, apparently of considerable extent. It is reported to afford anchorage and to have the native name of Klekane.

In the middle of this broad part of the passage lies **Warke Island**, a mile and a half long east and west, very narrow, high, and with deep water on either side. About **W.** by **N.** ½ **N.** from the western end of Warke Island the passage, under the name of Fraser Reach, extends ten miles, with a width varying from half a mile to more than one mile, and with very even shores, with several streams fed by lakes on the southwestern shore—one, southeastward from Point Kingcome, not indicated on the charts. At **Point Kingcome** it divides and becomes much wider. One arm, under the name of Ursula Channel, stretches some eight miles to the northward, when it divides and takes an irregular course. Three miles **N NW.** from Point Kingcome, at the mouth of Fisherman Cove or Ribachi Creek, is an anchorage indicated by Tebenkoff. The notch is deeper than is indicated on the Admiralty Chart, and the small wooded islet is connected with the main shore by a sand beach. There is only room for a small boat; according to Pilot W. E. George, a seventy-ton schooner anchored in twenty fathoms tails on to the beach. There is a deep gorge just north of the cove. **Fraser Reach**

The other arm, known as McKay Reach, takes a generally **W SW.** direction seven miles to Wright Sound. The Reach averages a mile and a half wide, bold-to, with rocky shores and high land on either shore. The northwestern extreme of Princess Royal Island, seven miles **SW.** ¾ **W.** from Point Kingcome, is called Nelly Point. The opposite headland, the southern point of Gribbell Island, about two and a half miles distant in a **NW.** by **W.** ½ **W.** direction, bears the name of **Point Cumming.** **McKay Reach.**

Directly **SE.** from Nelly Point lies **Holmes Bay.**† This bay or cove opens to the west, and indents the shore of Princess Royal Island to the extent of half a mile with a width of about four cables. The shores are bold and the water deep, except at the head and along the southern shore, where there is a tidal flat formed by the detritus from several streams. Anchorage may be had off this flat, a distance not much over two hundred yards, in fourteen to twenty fathoms.

On a small rocky point on the southern shore is the English astronomical station, which is stated to be in

Latitude	**53° 16′ 25″ N.**
Longitude	**129° 05′ 19″ W.**

It is **H. W. F.** and **C.** at $1^h\ 0^m$,—springs rising thirteen and neaps ten feet.

The variation of the compass in 1868 was **26° 40′ E.**

The anchorage is represented on British Admiralty Chart No. 1901. No directions are necessary for entering it.

The irregular sheet of water which intervenes between McKay Reach and the entrance to Grenville Channel is known as Wright Sound, from which, besides the foregoing, Verney Passage and Douglas Channel extend northward, and Whale Channel, Lewis and Cridge passages to the southward. Whale and Squally channels, with Lewis Passage and Wright Sound, surround **Gil Island**, named by Caamano in 1792, according to Vancouver. It is fifteen miles long **N NW.** and **S SE.**, nearly six miles in width, and rises near its northern end in a peak, called Mount Gil,‡ to the height of three thousand feet. **Wright Sound.**

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*Khutze and Aaltanhash are the presumed Indian names of these inlets, which appear to be extensive.

†This is the name which appears upon the plan on British Admiralty Chart No. 1901, both the old and new editions. On the old edition of 1923 it is also called **Holmes Bay**, but on the latest edition **Homes Bay**, probably by accident. On the very imperfect British Admiralty Chart No. 2430 it is called **Horne Bay.**

‡The name is usually misspelled **Gill.**

The Farrant Island shores of Wright Sound and Grenville Channel show, for this region, an unusual amount of low and level land.

The tides hereabouts are stated to *flood to the northward*, and the depth of water is very great. Vancouver found anchorage on the northeastern side of Gil Island two miles from its northern extremity, in forty fathoms, stones, shells and sand, about a cable from the shore; and also in thirty-three and forty-three fathoms, sand and mud, southwesterly from Turtle Point, the **NW.** extreme of Gil Island,—the adjacent shores bearing from **S.** by **E.** round by **E.** to **NE.** by **E.**, the opposite shore about half a league distant. The extremity of Turtle Point has no very marked hill on it, though something of the kind appears on the chart.

Anchorage, Gil Island.

About **N.** ¼ **W.**, two and a quarter miles from Turtle Point, is Cape Farewell, rather low, densely wooded, and the southern extreme of **Promise Island.** This island is about two miles long **N NW.** and **S SE.** and over a mile wide, (according to the plan,) rising to seventeen hundred feet, and separated from the mainland at the **SW.** extreme of Douglas Channel by a narrow passage known as **Coghlan Anchorage.** The **SW.** extreme of Promise Island, forming the eastern headland of this passage, is called **Thom Point,** and must not be too closely approached, *rocks* extending off nearly half a cable **S SW.** from it. Hence to the opposite headland, Camp Point of British Admiralty Charts (but not to be confounded with Camp Point at Klewnuggit Inlet), **SW.** by **S.** one and a half cables, the water is deep, the rocks appearing to be steep-to. From Thom Point **Observation Point** lies **W NW.** half a mile, and according to British Admiralty Chart No. 2189 (December, 1881) is situated in

Rocks off Thom Point.

Latitude	**53° 22′ 44″ N.**
Longitude	**129° 16′ 15″ W.**

Thence **N NW.** lies *Harbor Rock*, directly in mid-channel, drying six feet at low water, and having twelve feet of water over it in springs and eight feet in neap tides at high water. There is a clear passage on either side of it about a cable in width with eight to seventeen fathoms water.

Harbor Rock.

From Observation Point the anchorage bears nearly **NW.** by **N.** ¼ **N.** six cables. The lower part of the passage has bold shores, ten to more than thirty fathoms water, and averages about a quarter of a mile in width; just beyond the anchorage it makes a rather short turn to the **NE.** and narrows to less than a cable with a depth of nine to fifteen fathoms. In this narrow part *the tides meet;* the shores are rocky and mostly steep-to. This portion is termed **Stewart Narrows.**

At the anchorage the shores slope a little more gradually, and a vessel will have a swing of barely a cable in every direction while anchored in seven fathoms, sand. At this point it is **H. W. F.** and **C.** at $0^h\ 30^m$, springs rising eighteen and neaps fourteen feet. There seem to be no concealed dangers except *Harbor Rock.* From the distance between the entrance and the anchorage this is not a very convenient resort. It would not seem advisable to attempt an entrance from the **NE.** except with a steamer.

SAILING DIRECTIONS

FOR ENTERING COGHLAN ANCHORAGE FROM THE SOUTHEAST.

After passing Thom Point in mid-channel keep the eastern shore aboard until Mount Gil, on Gil Island, is in one with Thom Point astern, bearing **SE.** ¼ **E.** A **NW.** ¼ **W.** course then leads directly to the anchorage clear of all dangers.

In quitting the anchorage, Thom Point under the peak of Mount Gil **SE.** ¼ **E.** until Observation Point bears **S.**, thence in mid-channel, leads out clear of all dangers.

About half a mile westward from Camp Point, near the shore, is a small island, westward from which is a cove which penetrates farther than is shown by the Admiralty charts, and appears to be so continued, parallel with the shore, as to cut off a narrow section nearly a mile in length.

About seven miles **W.** ½ **S.** from Point Cumming is Yolk Point, on Farrant Island, low and wooded, forming the southern headland of

GRENVILLE CHANNEL,

which extends **W NW.** forty-five miles, without any bend or curvature of importance. Its width varies from a mile and two-thirds, near the western entrance, to a quarter of a mile in about latitude **53° 31′ N.**, the depth of water varying from fifty to one hundred fathoms or more in the main channel. The southern shore is formed by Pitt Island for the greater portion of the way and presents no conspicuous indentations. The northern or continental shore is penetrated by four partly unexplored inlets at nearly regular intervals from one another.

Farrant Island, on which Yolk Point is situated, for somewhat over four miles is unusually low, forms the southern shore of the channel, and is separated from Pitt Island by a very narrow unexplored gorge called **Union Passage**. The mountains on either side of Grenville Channel rise to a height varying from fifteen to thirty-five hundred feet, and their proximity to the shore and general abruptness give an appearance to the channel of being even narrower than it really is. At a distance varying with conditions of wind, weather and tide of from ten to twenty-five miles **W NW.** from Yolk Point the tides, which have hitherto flooded to the north and west and ebbed to the south and east, are met by tides flowing in an opposite direction, from the north and west. The shores are everywhere wooded, the mountain sides seamed with snow and land-slides, which have carried away the timber in their paths. Numerous cascades and streams are visible, fed by mountain lakes or the snow in the higher ravines, which is not entirely melted late in the summer, and probably exists throughout the year in greater or less quantity.

About fourteen miles from Yolk Point is the entrance to Lowe Inlet, on the northern shore; three-quarters of a mile within this entrance bottom is found in twenty fathoms, where anchorage may be had. The approach to this inlet from the eastward is indicated by Bare Hill, four hundred feet high, (the basal spur of a higher wooded peak **W.** from it,) on the southern shore, from which **NW. ¾ N.** two miles the entrance lies fronting to the south. **Lowe Inlet.**

The entrance, two and a half cables wide **W NW.** and **E SE.**, lies between Hepburn Point on the east and James Point on the west. At certain stages of the tide whirls are formed in this vicinity. On the *Whiting Bank*, in mid-channel, two cables from the entrance, anchorage may be had in eight or ten fathoms, sand and shells.

The inlet extends to the northward over a mile and a half, widening to four cables, and afterward contracted to one cable by David Point, beyond which it forms a rounded harbor, called Nettle Basin, into which enters a waterfall from lakes to the **NE.** Anchorage may be had in the widest part of the lower inlet in twenty fathoms, and in sixteen fathoms in the basin. Four cables **N NW.** from the entrance and a cable and a half **W.** from Don Point, on the eastern shore, are *two rocks awash* at high water. ***Rocks awash.***

This harbor is represented on British Admiralty Chart No. 2189, (December, 1881,) from which it is found that James Point is in

Latitude	**53° 32′ 30″ N.**
Longitude	**129° 35′ 48″ W.**

It is **H. W. F.** and **C.** in Lowe Inlet at $0^h\ 30^m$, spring tides rising seventeen and neaps fifteen feet, and running one to four knots.

The variation of the compass in 1872 was **26° E.** The land on either side of the inlet rises to two thousand feet, mountainous and wooded. No directions are necessary for entering.

About sixteen cables from Lowe Inlet, on the Pitt Island shore of Grenville Channel, is a cove or opening which has not been examined and does not appear on the Admiralty Charts.

Eight miles nearly **W NW.** from Tom Islet at James Point, on the northern shore, is **Evening Point**, abreast of which the flood-tides from **NW.** and **SE.** are reported to meet, and from which a number of rocks and islets extend in a **NW.** by **W.** direction. Between James and Evening points the depth of water in Grenville Channel averages from fifty to seventy fathoms. Behind Evening Point, in an **E NE.** direction, the land rises to nearly nine hundred feet. This point forms the **SE.** extreme point of **Nabannah Bay**, about three cables in extent, indented at right angles to Grenville Channel in a northeasterly direction, and practically closed to navigation by a chain of islets, rocks and foul ground, which extend in a **NW.** by **W.** direction across the entrance, forming a barrier, behind which the bay affords one to fourteen fathoms water over sandy bottom. South from Nabannah Bay a fine waterfall is conspicuous on the Pitt Island shore.

Nearly half a mile **NW.** by **N.** from Evening Point is the outer extremity of **Morning Point**, which forms the northwestern headland of the bay, and consists of a moderately elevated, rounded promontory, fronting to the **SW.**, and before which extends *a large area of foul ground*, marked by kelp and several rocks, constituting the *Morning Reefs*, the **SW.** limit of which has a continuous trend with the northern shore of the channel **NW.** by **W.** about eight cables from Evening Point. ***Large area of Foul Ground.***

In this vicinity the navigator should keep the west shore of Grenville Channel well aboard until Leading Island opens clear of Camp Point, to avoid the reefs. The clear passage **SW.** from it is of the same width as the portion of Grenville Channel **SW.** from Evening Point, and here the tides run four knots at springs.

The landmarks for passing northward clear of this foul ground are Bare Islet (in Klewnuggit Inlet) open from Camp Point **NE. ¾ E.**, according to British Admiralty Chart No. 2189, (December, 1881,) from which it is found that the geographical position of the observation spot on Morning Reef, close to Morning Point, is

Latitude ..... 53° 39′ 24″ N.
Longitude ..... 129° 44′ 51″ W.

It is **H. W. F. and C.** at 0^h 30^m, and the spring tides rise seventeen feet. The ebb tides **N.** and **S.** separate near the **NW.** extreme of these reefs.

The variation of the compass hereabouts is about **26° E.**

Half a mile **N.** from Morning Point is Camp Point, a small lumpy rock connected by a beach with the main shore, and forming one of the landmarks for passing the reefs. **W SW.** from it about fifty fathoms is a small *submerged rock*. This point forms the southern headland of **Klewnuggit Inlet**, an irregular indentation of the main shore, dividing into several arms, some of which have not yet been fully examined. The principal of these have a generally **NW.** and **SE.** direction, transverse to the entrance and parallel with Grenville Channel. In that arm which extends to the **NW.** protected anchorage is afforded. The other, extending **SE.**, called **Exposed Arm**, is obstructed by rocks and islets.

Camp Point.

The entrance to Klewnuggit Inlet is about six cables wide **N NW.** and **S SE.** The shore opposite Camp Point rounds gradually to the eastward and westward without forming any noteworthy point or angle, and rises rapidly to the height of more than twelve hundred feet.

Six cables **NE. ¼ E.** from Camp Point lies Bare Islet, of small extent, connected with the shore by a rock platform, and forming one of the landmarks for clearing Morning Reef. It is really a part of **Leading Island**, about one hundred and twenty feet high, of triangular outline, which extends from Bare Islet about half a mile in a **NW.** by **N. ½ N.** direction to its northern angle, and is separated by a narrow and unnavigable passage from the mainland. Behind this island is a passage two and a half cables wide, separating it from the mainland **NE.** from the island. This passage is prolonged to the **NW.**, becoming somewhat narrower, and terminating at a broad *tidal flat* over which streams flow into the harbor.

Bare Islet.

The anchorage is in mid-channel **NE.** from the middle of Leading Island, in twenty to twenty-five fathoms, muddy bottom,—the **SE.** shore of the island bearing **S.½ E.** The shores are everywhere bold-to. There appear to be no concealed dangers, and no directions seem necessary for entering.

The Anchorage.

It is **H. W. F. and C.** at 0^h 30^m, and spring tides rise seventeen feet.

This anchorage is shown by a plan on British Admiralty Chart No. 2189, (December, 1881.)

From the vicinity of Camp Point to the vicinity of the Gibsons the northern shore of Grenville Channel extends about twenty-one miles in a generally **W NW.** direction, and appears less elevated than it does to the southward. It is mostly compact and steep-to, with three unsurveyed openings on the eastern shore and one on the western side.

The first of these* is known to the pilots as **East Inlet**, and looks as if it would afford anchorage. It is about five and a half miles **W NW.** from Morning Point, and has a small islet at its western point of entrance. The entrance of the second, Baker Inlet, is about six miles farther in the same direction, with a narrow entrance but apparently quite extensive within and in an easterly direction. There is also here a small islet or rock in the entrance. From this in a west and southwesterly direction nearly three miles is a narrow but deep opening, which from Grenville Channel appears to cut Pitt Island in two, and may join the eastern arm of Petrel Channel. **NW.** by **N. ½ N.** across the channel from this entrance is West Inlet of the pilots.† It has a narrow entrance, just within which it turns sharply, and is stated to afford good protection and anchorage for small craft. It has not been surveyed.

In this portion of Grenville Channel the tides are moderate, averaging a knot an hour, and flood from the northwestward.

Stuart Anchorage.

Twenty-six miles from the entrance of Lowe Inlet, on the Pitt Island shore, lies Stuart or Stewart Anchorage.

Before reaching this point two small indentations occur which might be mistaken for the anchorage, which, in coming from the eastward, may be known by being situated two and a half miles to the westward from the entrance of West Inlet on the northern shore,—the misleading indentations being one on either side of a point immediately abreast of the above-mentioned entrance.

Marks.

The anchorage is sheltered to the **SE.** by **Bonwick Point**, rocky and of small extent, with an islet near it; to the southward by **Pitt Island**, and to the northward by *a four-fathom shoal* putting off from *Stag Rock* for three cables, parallel with the shore and marked by kelp. This rock lies four and a quarter cables **W NW.** from Bonwick Point and about the same distance **N.** by **W. ¼ W.** from the mouth of a stream on the Pitt Island shore. The rock dries to the extent of thirteen feet, and a cable south of it, marked by kelp, is *another rock* dry at low water. Stag Rock is above water an hour and a half after high water.

Rocks and shoals.

* It is indicated by the name **Exn-geal** on British Admiralty Chart No. 1923 A, but this looks like an error of engraving.
† **Kum-ea-lon** of British Admiralty Chart No. 1923 A.

SW. by **W.** ½ **W.** half a mile from Stag Rock is the English astronomical station, situated according to British Admiralty Chart No. 1901,* on the Pitt Island shore, in

Latitude	**53° 52′ 05″ N.**
Longitude	**130° 05′ 11″ W.**

The variation of the compass was **27° 25′ E.** in 1868.

In this vicinity it is **H. W. F.** and **C.** at noon to 1ʰ **p. m.**, springs rising twenty feet.

Between the rock and Bonwick Point there is fifteen to twenty-seven fathoms, between it and the mouth of the stream before mentioned there is six to twelve fathoms, while between the shoal and the Pitt Island shore the depth varies from seven to twenty-four fathoms. In entering from the eastward the only direction necessary is to keep about a quarter of a mile from Bonwick Point and the shore south of the anchorage until the mouth of the stream bears **SE.** half a mile, when anchorage may be had in from ten to fifteen fathoms. This anchorage is delineated on British Admiralty Chart No. 1901, (October, 1879.) ***Direction for entering.***

Just behind the peninsula which protects the anchorage is **Shrimp Cove,** said to have six or seven fathoms water and to be snug for small coasters. It is not shown on the charts.

Five miles west of Stuart Anchorage, at the **NW.** extreme of Pitt Island, is **Hill Point,** a somewhat low, symmetrical, wooded point, separating the entrances of Grenville and Ogden channels and backed by slowly rising hills to the southward, which reach nearly twenty-eight hundred feet in height. Grenville Channel here attains a width of four miles, with a group of comparatively low wooded islands in the middle of the passage, called the **Gibson Islands.**

The passage northeast from the Gibsons has not more than six fathoms in it, and is infested with *several shoals,* from which reasons the passage to the south of the Gibsons, which is clearer, with plenty of water, has come to be generally used. Here the water rapidly deepens from forty to eighty fathoms toward the westward. In going through at night keep not less than five cables **SW.** from the Gibsons to avoid *Watson Rock,* which covers two or three feet at high-water springs. Thence to Arthur passage is clear.

From the sheet of water at the termination of Grenville Channel three other passages open,—two to the north and west, between Porcher Island on the **SW.** and the mainland on the **NE.,** with Kennedy Island and the Gibsons dividing the included waters into two passages; the third,

OGDEN CHANNEL,

between Porcher and Pitt islands, leads to the Hecate Strait in a southerly direction. The opening where it joins the strait, now known as **Browning Entrance,** was called **Syax Harbor** by Ingraham in 1791. It varies from less than half a mile to more than two miles in width, and is about fifteen miles long. Its southerly extreme has lately received separate names. A passage has been sounded through it, but the shores are yet imperfectly known, and there are numerous *dangers and obstructions,* most of which, however, are visible.†

S. by **W.** ½ **W.** from Hill Point four and a half miles is Alpha Bay, on the eastern shore of Ogden Channel and on the Pitt Island shore. It is situated at the mouth of a stream proceeding from a deep valley, and the anchorage is off the edge of a bank at the ***Alpha Bay.***

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* February, 1868, but not on later editions.

† "Ogden Channel I found to be good and with very little current, only one knot per hour, as the main current runs through Arthur and Malacca passages. The southern entrance to Ogden Channel is divided into two channels by Spicer Island, which are named respectively **Beaver** and **Schooner** passages, the former of which is the best. It is about one mile wide and free from rocks and shoals. With a light on *White Rocks* (northern point of Banks Island) and a beacon light on **Tree Island,** ships could enter the channel in all weathers.

"**Schooner Passage** is also very good; it is narrow, with a cluster of small islands, all above water, at its entrance. I consider that there is not a better locality for ships to make the land on the whole coast than here. There is a small island named **Bonila,** which is a remarkably conspicuous object, being dome-peaked and unlike any other on this coast, and may be seen for twenty or thirty miles at sea.

"There are other reasons for recommending ship-masters coming from the south to make this point, viz: there being no inlets for fifty miles, the tide sets regularly along the coast; there is deep water of from sixty to seventy fathoms, and as soon as abreast of Bonila Island about thirty-five fathoms; off White Rocks seventy fathoms, and a few miles farther forty fathoms. This is named Browning Entrance on Pender's Chart.

"Ships could sail in or out of Port Fleming with a good commanding breeze, the distance being only eighteen to twenty miles. The temperature of the climate was found to be very even during a fifteen days (latter part of July) sojourn in this locality, the daily mean of the thermometer from 54° to 58° F."—*Capt. J. C. Brundige, R. N., Report to the Engineers of the Canadian Pacific Railway, Ottawa* 1880.

[The above note by Capt. Brundige gives a much more favorable idea of the navigability of these passages than would be gathered by a navigator from an examination of the Admiralty Chart No. 1923 A.]

mouth of the stream, in ten or twelve fathoms, about two hundred yards from low-water mark. It presents no advantages as an anchorage, and better ground for that purpose may be had within a few miles. North Point, four cables **N NW.** from the anchoring ground, is stated to be in

Latitude	**53° 52′ 01″ N.**
Longitude	**130° 17′ 34″ W.**

The variation of the compass was **27° 25′ E.** in 1868.

It is **H. W. F. and C.** between **12^h** noon and **1^h** p. m., springs rising twenty feet.

It is represented, and also Ogden Channel, on a large scale on British Admiralty Chart No. 1901, (October, 1879.)

Two and a half miles **W SW.** from the larger Gibson Island is **Peninsula Point**, a small, low, wooded point making out half a mile, with deep water on its southern side, but anchorage in eight or ten fathoms near the mouth of the Oona River on its northern side. The point is composed of metamorphic rocks, sandstones and shales. In this vicinity the surface-water changes to a dirty white, apparently coming from the river Skeena (on old maps called river Skip) through Port Essington, and probably derived from glaciers at its head waters.

Anchorage at Oona River.

Of the two northern passages **Telegraph Passage** is continuous with the shallow passage **NE.** from the Gibsons, and has been but partially examined. It is about a mile and a half wide, and joins at its northern termination the entrance to Port Essington. It is sheltered on the west by the Gibson, Bedford, Marrack and Kennedy islands.

The southeastern portion of the passage affords anchorage nearly everywhere, apparently with good protection, and has been named **Port Fleming.***

The part of Telegraph Passage eastward from Kennedy Island does not seem sufficiently well surveyed to be advisable for vessels without local knowledge or a pilot. There is a passage with two and a half fathoms least water, called the **North Skeena Passage,** which passes northward of **Smith Island** and **De Horsey Island,** by which it would seem a passage might be had into Skeena Inlet or River.†

* "Between Kennedy Island and Grenville Channel, distance six miles, there are three islands, Marrack, Bedford and Gibson, and between these islands and the mainland there is a good harbor of even soundings from three to seven fathoms, with muddy bottom and very little current, as the tides meet here and form still water. This basin I have named **Port Fleming**. It is sheltered from all winds except the north, which could not create any sea owing to the tide setting out through the different channels. Port Fleming would accommodate a large number of ships in safety, and there would be no difficulty in building wharves, as the water close to the shore is from three to four fathoms deep. On asking masters of steamers the reason they did not anchor in this place, their reply was that they always thought the water shoal and that it was out of the track for vessels bound north, as they came through Grenville Channel and kept Gibson Island on their starboard hand.

"Captain Madden, an old trader and pilot, stated that he had always found this harbor good, well sheltered from winds and free from currents and sea, and considered it the best between Port Simpson and Vancouver Island for large or small ships.

"This is the only place that I could recommend for a terminus of the Canadian Pacific Railway nearer the mouth of the **Skeena River** than Port Simpson. I consider there would be no difficulty in bringing the railway down past Essington. The land presents a good site for a town as it rises gradually back for some distance.

"The approach to Port Fleming from the north is by Arthur Passage, which opens into Chatham Sound. It is about two miles wide with a current of two knots per hour. Good anchorage was found on west side of Smith Island, opposite Mount McGrath."—(*Report of Capt. J. C. Brundige, R. N., 1880, to Canadian Pacific Railway Engineers.*)

† "The entrance to the Skeena River is divided into three channels by Smith and Kennedy islands. They are designated **North, Middle** and **Telegraph** channels or passages. **North Channel** is suitable only for small craft. It is about three cables wide, with several sunken rocks and only two and a half fathoms water. The current is very swift. **Middle Channel** is obstructed by shifting sand banks, has irregular soundings in from three to eight fathoms, and is in some places very narrow. Steamers coming from the north often take this channel in order to touch at Port Essington. It is dangerous for sailing vessels or without a pilot. **Telegraph Channel** is the main passage, with not less than six fathoms water, (in the channel,) with a two or three knot current."—(*Report of Captain Brundige, R. N.*)

Port Essington lies outside of the limits of this description and is not therefore referred to in the text; but as this pilot may be used by navigators who wish to visit Port Essington, the remarks of Captain Brundige in regard to it are here reprinted. (See also Meteorology in Appendix). "Port Essington is situated on the (inlet forming the embouchure of the) river Skeena about eleven miles from the mouth. Here is a large basin about four miles long and two wide, from four to seven fathoms water with muddy bottom. The ebb tide runs out from four to six knots per hour and the flood tide runs in at a rate of three or four knots. The spring tides rise and fall twenty feet and the neap tides fifteen feet. A heavy cross sea is caused by strong winds from **NW.** to **SE.**, and vessels riding at anchor in the current here during a gale of wind would be likely to foul and trip their anchors. It is stated that in the months of December, January, February and even into April, heavy masses of ice and driftwood drift up and down with the tide, forming a serious danger to vessels or wharves in winter. Potatoes grow here well, but the soil suitable for cultivation is limited. Good timber is plentiful and of large size, especially spruce and yellow Alaska cedar." The geographical position of Port Essington, according to the map of British Columbia issued by the Geological Survey of Canada, 1881, is

Latitude	**54° 09′ N.**
Longitude	**129° 57′ W.**

The village of Port Essington (or **Spūk-aūt** of the natives) is situated on the north side of Skeena Inlet, on the west side of a point forming the angle between Skeena and Ecstall inlets. **Ecstal Inlet** is a long channel extending in a southeasterly direc-

There is quite a considerable mining camp near the entrance of the North Skeena Passage called Willaclagh. There is an unexplored passage leading to Venn Creek, Metla-katla Bay.

On the western side of Kennedy Island is the **Arthur Passage,** clear along the shore of Kennedy shore of Kennedy Island, but obstructed on the west by numerous islands parallel with the shore of Porcher Island, between which and them is the narrow and contracted Chismore Passage.

This is obstructed by *foul ground* at the southeastern end, is less than half a mile wide, six and a half miles long **NW.** by **W.** ½ **W.**, and affords anchorage in five to twelve fathoms. It is only accessible at its narrow northwestern entrance and by the short and narrow Bloxam Passage leading into it from Arthur Passage. **Chismore Passage.**

Arthur Passage is about five miles long, with a clear passage in deep water not over half a mile wide along the shore of **Kennedy Island.** This island rises to the height of nearly three thousand feet, is of oval shape, five and two-thirds miles long in a **NW.** and **SE.** direction, and about three miles wide. At its southeastern end, miscalled **Cardena Bay,** (for there is no bay, but a mere open roadstead,) good holding-ground may be had in four to nine fathoms.* There was at one time a cannery here.

At the **NW.** entrance to Arthur Passage **White Cliff Island,** of small extent, lies in the middle of the passage, bold-to except at its rocky **S SE.** end, two hundred and sixty feet high, and with a clear channel on either side. Marble has been quarried here.

SW. by **S.** ½ **S.** from the southern part of this island about a mile lies Chalmers Anchorage off a bight at the **NW.** end of Elliott Island, open to the **NW.,** with anchorage in fourteen fathoms. **NW.** ¾ **W.** from the anchorage about a mile and a half is the northeastern edge of *some reefs* which lie immediately eastward three cables from **Bamfield islets,** which are also surrounded by rocky shelving shores. The islets lie about a quarter of a mile from the northern shore of Elizabeth Island. Deep but narrow passages exist between this, the islets and the reef. From *the reefs* to *Cecil Patch* the passage is six cables wide with plenty of water. **Chalmers Anchorage.**

In leaving the Arthur Passage to the westward of White Cliff Island for Chatham Sound through Malacca Passage, the middle peak of White Cliff Island should be brought to bear **E.** ½ **S.** and kept so until the northwestern **Lawyer Islet** bears **NE.** This carries out in mid-channel.

Cecil Patch, marked by kelp and having four fathoms on it, lies one mile **W.** by **S.** from the main peak of White Cliff Island. It is in one with the eastern edge of Elliott Island bearing **SE.** ½ **E.** There is deep water between it and Elizabeth Island.

DIRECTIONS FOR CLEARING DANGERS.

A due **W.** course from the northern edge of White Cliff Island five miles will carry clear of all dangers. The latter, as far as known, are mostly visible, but great caution should be observed, especially in foggy weather.

Malacca Passage begins at White Cliff Island, and extends west for about six miles with an average clear width of a mile and a quarter. Its northern limits are formed by *foul ground* stretching to the westward for more than two miles from the northwestern end of Kennedy Island, and the Genn

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tion from its junction with the Skeena. From this channel, according to Mr. H. J. Cambie, come the greater part of the ice-floes which encumber Skeena Inlet in the cold season. Behind the flat on which the villege stands is a ridge which rises in one place to a rather remarkable conical mountain.

Skeena Inlet, the estuary of the Skeena River, was first explored by Vancouver's boats under Whidbey in July, 1793. The name of Port Essington was originally applied by Vancouver to the whole estuary. (Rep. Geol. Survey Canada, 1879–80, pp. 9 B–10 B.)

Captain Brundige also says: "I visited the Skeena again in the latter part of December and found large quantities of ice drifting up and down the river. Ships could not remain at Port Essington during the months of December, January, February and March, and well into April. The north channel of the Skeena is blocked full of ice nearly all winter, but it seldom reaches down as far as Kennedy Island. Port Fleming is free from ice.

"I also visited Essington during the month of February and found large quantities of ice in and around it. The snow-fall here has been about six feet on the level. I measured the snow at several places and found three feet at Port Fleming and one and a half feet at Inverness, (the station at Cardena Bay.)

"The head of tide water in Skeena Inlet, and where the river proper appears to commence is about eighteen miles above Port Essington. The river is navigable with difficulty for small stern-wheelers about thirty-eight miles above tide water to **Kitsumgallum,** where there is a trail up the valley of the **Kitsumgallum River,** to the head-waters of Naas River.

"It is about one hundred miles from tide water, with a rise of seven hundred and twenty-five feet to Skeena Forks or Hazleton, a settlement not far from the abandoned Fort Stager, erected in 1866 by the Western Union Telegraph Company's expedition near Kispaioks village."

*This anchorage is recommended by Pilot W. E. George, who states that in heavy gales the wind holds a vessel broadside to the current—the only objection to the locality. It is also recommended by Lieut. Com. H. E. Nichols, U. S. N., as a temporary stopping place, and by Captain Brundige who says it is only exposed to **S.** and **SW.** winds. There were three houses, a wharf and clearing, Indian summer village, and wood for sale to steamers, in May 1880, at this place, which is called Inverness or Aberdeen fishery. Chalmers Anchorage is also reported to be a good temporary stopping place in case of fog or darkness on reaching Chatham Sound.

and Lawyer islets extending with the same trend three miles and a half farther. The southern limit of Malacca Passage is formed by the shore of Elizabeth and Porcher islands, extending to the westward six miles from the entrance of Arthur Passage to **Point Hunt**, (Quilmass,) which has an islet off it called Grace Islet.

Malacca Passage.

There is an abundance of water in the channel, which is nowhere shoaler than forty fathoms; the dangers previously enumerated are near the shores, mostly visible and easily avoided. To the northward of the Lawyers the waters have not been sounded out. The shores to the northward are those of the **Chim-sy-an* Peninsula**, bounded to the eastward principally by Skeena Inlet and Wark (or Work) Channel. The north Skeena passage and the shores **NW.** from it are very imperfectly represented on the latest charts. Some corrections are indicated very roughly on Dawson's map of Northern British Columbia, Western Sheet, issued by the Dominion Geological Survey in 1881.†

According to this authority a narrow passage extends from near **Woodcock Landing** (of British Admiralty Chart 1923 A, 1881) to the westward and northward, cutting off Tree Point from the mainland, sending a branch to join the sea near **Coast Islet**,—the passage itself continuing northwesterly joins the large basin in which **Oldfield Island** (containing Mount Oldfield, 2,300 feet high) is situated. This basin enters Malacca Passage between Lima Point and Coast Islet and connects with Metla-katla Bay through Venn Creek at its **NW.** angle. The large mass of land west of **Oldfield Basin, E SE.** from Metla-katla Bay, and of which Lima Point appears to be the **SE.** extreme, has been named on British charts **Digby Island.**

CHATHAM SOUND.

This great sheet of water extends in a **NW.** by **N.** and **SE.** by **S.** direction for thirty-five miles, with an average width of seven or eight miles. To the eastward the Chim-sy-an Peninsula; to the southward Porcher and Stephens islands; to the westward the Dundas Islands; and to the northward the mainland and adjacent islets and islands form the limits of the sound. The principal passages extend northward. One is the Edye Passage, with numerous islets in it, from the southern extreme of the sound to Hecate Strait, between Porcher and Stephens islands. Another is called the Brown Passage, eight miles wide and in part clear, between Stephens Island and the Dundas group, near the entrance of Hecate Strait.‡ Lastly may be mentioned the broad opening at the **NW.** extreme of the sound, where its waters meet and mingle with those of Dixon Entrance. In the southern half of the sound are a number of islets and islands, the principal of which are the **Lucy, Rachael** and **Kinnahan islands**, each group containing several islets, which are high, averaging two hundred feet. Only a small part of the sound has been examined, and there the depth is quite irregular, varying from eleven to more than one hundred fathoms. The shores of the sound have been but slightly examined, especially on the **NE.**, between the Telegraph Passage and Lima Point, and all statements in regard to its navigation are necessarily based upon scant material, which will doubtless in the future require revision. No serious concealed dangers are indicated on the lastest charts (1879) in the northeastern part of the sound between the Lawyer and the Lucy islands. In the northern part of the sound several *sunken rocks* are indicated, but of which the positions are somewhat doubtful.

Edye Passage.

Brown Passage.

A danger has recently been reported in Brown Passage which is not on some recent charts, and therefore worthy of mention here, though the passage itself will not be described. This is *Stenhouse Shoal*, reported by Capt. George Brown, U. S. N.,§ as being five miles west by south a quarter south from Hanmer Rocks and four miles southward from the western Connel Islet. This is three-fourths of a mile **N NW.** from the position indicated by local pilots, but neither position is claimed to be more than an approximation. Captain Brown considered the shoal to be two or three cables in extent and to have about eight feet of water on it.

Stenhouse Shoal.

Thirteen and a quarter miles **NW.** ¾ **N.** from the western extreme of Point Hunt is the southern point of Tugwell Island, so-called, though united at half-tide by a *sand-bar*, a mile and a quarter long, with the Chim-sy-an Peninsula. This island is about two hundred feet high, wooded, with bluff shores to the beach, whence, except to the eastward, *foul ground, sand-bars and kelp* extend seaward from half to three-quarters of a mile. The southern end is called Point Dawes, and the northwestern Point Chopman. The island is about a mile and a quarter long, and at its widest part half a mile broad. From the northern shore *a sand-bar*, covered at half-flood, extends **NE.** by **E.** ½ **E.** a mile and a quarter to the mainland, which it joins at Observation Point.

Tugwell Island.

Sand-bar.

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* Variously spelled **Chim-sain, Tsimpsean**, &c.; properly accented on the last syllable.

† In connection with the annual report of the Survey for 1879-'80, 8vo, Montreal, Dawson Bros. 1881.

‡ Both of these are represented in detail on British Admiralty Chart No. 2453, (October, 1879,) with plans of anchorages in them. It lies outside the scope of this work to enter into description of these passages, which for the Inland Passage are only of subordinate importance. Brown Passage is the Derby Sound of Ingraham in 1791.

§ U. S. Navy Department, Hydrographic Office, Hydrographic Notice No. 27, 1879.

SW., about four miles from Point Dawes, is the Lucy group of islets, small, bold-to, and two hundred feet high. According to British Admiralty Chart No. 1923A, (December, 1881,) **S.** by **E.**, somewhat more than five miles from Point Dawes, is the *Alexandra Patch*, a mile in extent, with eleven to seventeen fathoms, sand and mud, surrounded by deep water. ***Alexandra Patch.*** To the eastward from Tugwell Island and the bar lies Metla-katla Bay,* where is situated the well-known village and mission of **Metla-katla**. The bay is about three miles in extent **N.** and **S.** and a mile and a half wide,—the contracted upper portion of it near the mission taking the name of **Venn Creek**. It is protected by the mainland, Tugwell Bar and Island on all sides, except the south. In the inner part of the bay completely **Metla-katla Bay.** sheltered anchorage may be had in Venn Creek, requiring, however, good local knowledge or a pilot to pass safely between the reefs, rocks and islets by which the bay is infested. The shores throughout are bordered by *shoals* or *foul ground*. At the eastern part of the entrance lie the three Cridge Islets, of small extent, respectively two feet, one hundred and one hundred and fifty feet high. Northward from them for nearly a mile to Straith Point are rocks, reefs and foul ground. Nearly midway between these islets and the kelp ground about Point ***Alford Reefs.*** Dawes are the *Alford Reefs* in the middle of the entrance with *dangerous sunken rocks*, usually marked by kelp, with a small dry patch at lowest water. Inside the reef is a clear ground of about a mile in extent, where anchorage may be had on rather uneven bottom in seven to twenty fathoms. To the northward of this numerous reefs and islets occur. The more important of these are as follows: **Devastation Island**, one hundred and fifty feet high, wooded and less than a quarter of a mile in extent, nearly a mile **NE.** by **E.** from Point Dawes; three-quarters of a mile farther, on the same bearing, lies **Pike Island**, also wooded and one hundred feet high, against the eastern shore of the bay, with **Shrub Islet**, a small wooded islet, **NW.** a cable and a half from it. Between Pike and Devastation islands, about midway, and a little to the **S SE.** of a line joining their extremities, lies **Knight Islet**, a small bare rock, bold-to and ten feet high. Half a mile north of Devastation Island is **Carr Islet**, sixty feet high, wooded and of very small extent. The buildings are situated on **Mission Point**, three-quarters of a mile northward from Pike Island. All the adjacent land is wooded.

This bay, with Duncan Bay, is represented on British Admiralty Chart No. 364, (with very important corrections from earlier editions to April, 1872,) from which it is learned that **H. W. F. and C.** occurs at **noon**,—spring tides rising twenty-one feet. The variation of the compass in 1865 was **27° 40′ E.**

Duntze Head, Esquimalt Harbor, being taken as in longitude **123° 26′ 45″ W.**, the position of the astronomical station on Observation Point was fixed by the English observers in

Latitude	**54° 20′ 10″ N.**
Longitude	**130° 27′ 30″ W.**

According to Captain Brundige, Metla-katla is only fit for small vessels, being too contracted inside. He states that steamers of any size are obliged to remain some distance outside. Venn Creek at its head connects with the unsurveyed Oldfield Basin, east from Digby Island, which extends southward and eastward, connecting with Malacca and North Skeena passages.

SAILING DIRECTIONS

FOR ENTERING METLA-KATLA BAY.

I. ***Westward from Alford Reefs.***—A course bringing Knight Island midway between Shrub and Pike islands **N NE. ½ E.** leads clear of the reefs. When the vessel is in one with Dawes Point bearing **W NW.** and the largest Cridge Island bearing **E SE.**, a **N.** by **W.** course about one mile leads to the anchorage in ten to fifteen fathoms, mud, **NW.** from Devastation Island.

The channel to the inner or Venn Creek anchorage is buoyed, but should not be attempted without a pilot. Three and a quarter fathoms can be carried into it over the bar at low water, but within the bar there is anchorage in ten or twelve fathoms, sand and shell, with a swing of one cable in every direction.

II. ***Eastward from Alford Reefs.***—A course bringing the Mission flag-staff in one with the west point of Pike Island **N.** by **E.** leads clear of the reefs. When within the line joining Dawes Point and the larger Cridge Islet, anchorage may be had in seven to twenty fathoms midway between Straith and Dawes points.

Duncan Bay lies northward from Tugwell Island and its associated shoals, affording a much better and less obstructed anchorage than Metla-katla, but open to westerly winds. The shores, as in Metla-katla Bay, are everywhere foul or bordered by shoal water. The *foul ground* extends off the northern shore of Tugwell Island, and the shore of the mainland, in some places, over six cables length.

* Spelled **Metlah-Catlah** on British Admiralty Charts.

The *Hodgson Reefs*, a series of dangerous rocks and shoals, are separated from the shoals of the mainland by a narrow and inadvisable passage. The southern extreme of these reefs is situated somewhat over a mile and a half **W.** by **S.** from Point Ryan, whence they extend in a **N.** by **W.** direction nearly two miles with an average width of more than half a mile. A large patch in the southern portion is uncovered after half-ebb. They do not seem to have been very thoroughly examined.

The Hodgson Reefs.

The entrance to Duncan Bay, however, is clear and free from dangers, and there are no impeding islets or rocks in the more convenient portion of the anchorage. This bay and vicinity are represented with Metla-katla on British Admiralty Chart No. 364, April, 1872, with important corrections of the older editions.

SAILING DIRECTIONS

FOR THE USE OF DUNCAN BAY.

From a position at the entrance, Point Chopman, Tugwell Island, bearing **SE.** nearly a mile, and Point Ryan **NE.** by **N.** a little more than a mile, the course is **E.** a mile and a half to the anchorage. At the position mentioned, nearly in mid-channel, the entrance, clear of foul ground, is about a mile wide, and eight fathoms is the least water to be found on the course given. At the anchorage seven or eight fathoms, sandy and muddy bottom, may be had—the three-fathom curve over a cable distant to the north or south. About two cables farther in on the same course lies *Hecate Rock*, in ten and a half feet, with Point Chopman bearing **SW.** by **W.** ¼ **W.** and Carr Islet **S.** by **E.** To avoid this danger navigators should anchor before Point Ryan bears to the westward of **NW.** ¼ **W.** In leaving the bay, bound to the northward, the course from the anchorage is **W.** until Point Ryan bears **E NE.**, or nothing to the northward of **W.** by **N.** until two and a quarter miles to the westward from Point Ryan.

From Duncan Bay northward toward the eastern part of Dixon Entrance Chatham Sound is protected by the Dundas Islands, and at its northern entrance is beset with numerous little-known rocks, reefs and islets.

For six or seven miles **N NW.** from Tugwell Island the shore of the mainland is fringed with *foul ground* and should not be approached within two miles without extreme caution. In the vicinity of **Tree Bluff** these westerly extending reefs project to a mile and a half. The bluff is marked by some cultivated ground and rises inland to two hundred and fifty feet.

Immediately northeastward from the bluff the shore is indented, forming Big Bay, about two and a third miles wide at the entrance, **N NW.** and **S SE.**, and extending some three miles in an easterly direction. Its native name is reported to be Lak-hou.* The northern headland is formed by South Island, about a cable and a half in extent, one hundred and fifty feet high, wooded and connected with the mainland by *a sheet of foul ground*, dry at low water and a mile in width. **S.** by **W.** from this island, *foul ground*, marked by kelp, extends three and a half cables. The western shores are also foul and should not be approached within two cables. According to Brundige, Big Bay has good anchorage at its head, in four to ten fathoms, fairly sheltered. The entrance, however, is difficult and *should not be attempted without good local knowledge.*

Big Bay.

The southern headland of Big Bay is **Point Trenham**, the northern angle of Tree Bluff, off which, about **W.** by **N.** ½ **N.**, the three-fathom line is only reached at the distance of a mile. The shores of the bay are all foul, and in its entrance, about mid-channel, is the *Ripple Bank*, **S.** by **W.** ¾ **W.**, nearly a mile from South Island, including a patch with only two fathoms on it; and the *Escape Reefs*, two patches, marked by kelp, about two cables each in extent, and somewhat within the Ripple Bank. These reefs bear from South Island respectively **S.** by **W.** and **S.** by **E.** about a mile,—both having small lumps dry at low water.

Reefs and banks.

Besides these, other dangers exist within the bay, which, it will readily be seen, is not to be recommended. In its eastern portion, near the northern shore, **Swallow Islet**, of small extent, rounded and rather high, is used as a landmark in entering Big Bay.

About two and a half cables **N.** from the northern part of South Island, and connected with it by foul ground at low water, is **Burnt-Cliff Island**, half a mile long **N NW.** and **S SE.**, averaging two cables wide, and rising, at its northern summit, one hundred and fifty or two hundred feet.

Within the bay it is **H. W. F.** and **C.** at $1^h\ 30^m$,—springs rising seventeen to twenty-two feet and neap tides fourteen to seventeen feet, according to British Admiralty Chart No. 2426, (March, 1872,) upon which this vicinity is delineated in detail.

The geographical position of the **S.** end of South Island appears to be, according to British authorities,

Latitude ---------- **54° 29′.1 N.**
Longitude ---------- **130° 28′.4 W.**

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* On British Admiralty Chart No. 2430 this bay is called **Pulley Gulf.**

SAILING DIRECTIONS

FOR ENTERING BIG BAY.

According to British authority, by keeping the S. edge of Swallow Islet in one with a sharp peak which may be distinguished inland E. by N., the navigator may enter Big Bay clear of all dangers, and with not less than six fathoms water, anchoring in eleven or twelve fathoms, mud, when South Island bears W NW. and the outer edge of Point Trenham S. by W. ¼ W.

FOR CLEARING THE DANGERS AT THE ENTRANCE OF BIG BAY.

Navigators bound N. toward Cunningham Passage will clear *Ripple Bank* by keeping the northern end of Burnt-Cliff Island in one with **Mount Griffin, N.** by E. ⅓ E., until South Island bears NE., when a due northerly course two and a quarter miles, according to the charts, will carry in clear of all dangers.

From Burnt-Cliff Island, NW. nearly four cables, lies **One-Tree Island**, of small extent and a hundred and fifty feet high, with rocks extending from it a quarter of a mile N. by W. ½ W., and only separated on its southeastern side by a narrow boat-passage from the foul ground northward from Burnt-Cliff Island.

One-Tree Island forms the southern point of entrance to Cunningham Passage and the western shelter of Pearl Harbor, which opens by two channels toward the passage, one on either side of *a patch of rocks* and islets known as the **Flat-Top Islets**, three in number, of very small extent, the northeasternmost being called Green Mound Islet, and the whole connected into one mass by a congeries of rocks forming a bank four cables long NE. by N. ½ N. and SW. by S. ½ S. and two and a half cables wide. S SE. from these islets lies the harbor, protected to the southward and eastward by the rocky platforms extending from the main shore to and around Burnt-Cliff Island. The shores are everywhere foul, but in the basin thus formed, and which has an extent of about half a mile, good holding-ground may be had in ten fathoms, Green Mound Islet bearing N. by W. ¼ W. and One-Tree Island SW. by W., with a free swing of about two cables in any direction. **Pearl Harbor.**

SAILING DIRECTIONS

FOR ENTERING PEARL HARBOR.

The only advisable channel is that between One-Tree Island and the Flat-Tops. Having followed the preceding directions for clearing *Ripple Bank* by keeping the due north course thereby indicated until the western Flat-Top Islet bears E. by N., a SE. by E. course will carry in clear of all dangers with a least water of ten fathoms.

At the northern termination of the passage between the Flat-Tops and the mainland is an indentation of the main shore, known as **Otter Anchorage**, open to the W. and N NW., and affording a contracted anchorage near a beach on the shore of the mainland, where wood is cut for the use of the steamers, &c.

Three cables NW. ¾ N. from Green Mound Islet, in Cunningham Passage, anchorage may also be had in twenty-five fathoms, hard bottom. From One-Tree Island N. by W. ¾ W. nearly a mile is **Fortune Point**, forming the northern extreme of the southern entrance of Cunningham Passage, low and wooded. The point is surrounded by *rocky ground* extending off shore and drying at low water from one to more than two cables in width. Due south from the point two cables is *Dodd Rock*, rarely covered by water, and which forms the southern buttress of the rocks about Fortune Point, as the latter extend but a very short distance beyond it, when they drop suddenly to five fathoms. Between this and the northern extreme of the rocks about One-Tree Island a passage exists four and a half cables wide NW. by N. ¼ N. and SE. by S. ¼ S. ***Dodd Rock.***

Nearly in mid-channel, however, somewhat westward from a line joining Dodd Rock and One-Tree Island, lies *Sparrowhawk Rock*,* a serious danger, bold-to and surrounded by kelp, in ten and twelve fathoms. It lies SW. by W. ¾ W. from Green Mound Islet and NW. ¾ W. from One-Tree Island, and has twelve feet of water over it at low water with a rise and fall of tide amounting to twenty-two feet. ***Sparrowhawk Rock.***

N NE. from it is the southern entrance of Cunningham Passage, which separates Finlayson Island from the mainland. This passage is nearly four miles long in a generally N NW. and S SE. direction, two and a half cables wide in the clear at its narrowest part, and widens toward the northern entrance

* Named from a British gunboat which struck upon it. There is no statement of its depth below the surface on any chart at hand. The figures given above are on the authority of Pilot W. E. George, of the steamer *California* in 1880.

to nearly a mile. The depth of water varies from ten to over thirty fathoms, averaging over twenty. The shores are everywhere foul for a short distance off, but a mid-channel course through the passage, except for the *Sparrowhawk Rock* at the southern entrance, is free from dangers. The immediate shores are compact, wooded and but moderately elevated, but on the mainland, toward the interior, eastward, the land rises into high peaks, among which is **Mount Griffin**, a mile and three-quarters **NE. ¼ E.** from Fortune Point and over fourteen hundred feet high. **Leading Peak** is **E. ¾ N.** from Fortune Point three miles, and twenty-two hundred feet high, while **Basil Lump** is nearly three thousand feet high and a mile and a half **E.** from the last.

Cunningham Passage.

The western shore of the passage is formed by Finlayson Island, not fully surveyed, but of ovate shape, about three miles long **NW.** and **SE.** and a mile wide. It rises about two hundred feet above the sea, densely wooded and of rather even contour, with rocky shores. Its northeastern extreme is **Sarah Point**, a mile and a third **N.** by **W. ¼ W.** from Fortune Point, low, bluffy, and from which rocks extend about a cable **N NE.** from the shore.

Finlayson Island.

The northern extreme of Finlayson Island is **Point Gordon**, in about latitude **54° 34′**, off which *rocks and reefs*, marked by kelp, radiate to a distance of nearly two cables.

SAILING DIRECTIONS

FOR ENTERING OR LEAVING CUNNINGHAM PASSAGE AT ITS SOUTHERN ENTRANCE.

A due **N.** or **S.** course laid to carry **E.** from the *Sparrowhawk Rock*, a little over a cable distant, will carry in or out clear of all dangers. In entering the more frequented passage northward from the *Sparrowhawk*, when Fortune Point, Finlayson Island, is in one with Red Cliff Point on the main shore bearing **NE.**, this course should be maintained until Leading Peak, in one with the northern side of Green Mound Islet, bears **E.** by **N. ½ N.**, which course carries into the entrance clear of dangers. This may be maintained until Sarah Point just comes out behind the northeastern angle of Fortune Point **N.** by **W. ½ W.**, when a northerly mid-channel course may be safely steered through Cunningham passage.

In leaving the passage by the same channel a mid-channel course between the Flat-Top Islets and Fortune Point may be safely maintained until Leading Peak is in one with the northern side of Green Mound Islet, astern, when a **W.** by **S. ½ S.** course carries out all clear.

On account of the more thorough survey which has been made of Cunningham Passage, which is represented in detail on British Admiralty Chart No. 2426, (March, 1872,) most navigators adopt it in preference to passing westward from Finlayson Island.

N. ½ W. a mile and a half from Point Gordon, the northern end of Finlayson island, is the southern end of Birnie Island, seven or eight cables long **N.** and **S.**, nearly three cables wide, and rising to a height of more than three hundred feet.

Birnie Island.

A mile and a third **E.** by **N. ½ N.** from Point Gordon lies the northeastern extreme of Cunningham Passage, known as **Village Island**, separated from the mainland only at high water, which covers a low rocky isthmus and for the time converts the point into an island. It is about three cables long **NW.** and **SE.** and one cable wide, rising to fifty feet, and having along its shores numbers of Indian houses of the T'linkit pattern. On its northern point is the observation spot from which most of the positions given on the British Admiralty Charts for this vicinity are computed, and which, according to British Admiralty Chart No. 2426, is situated in

Latitude ..... **54° 33′ 51″ N.**
Longitude ..... **130° 26′ 36″ W.**

From the western extreme of Village Island, **SW. ¼ W.** about two cables, lie the *Hankin Reefs*, marked by kelp, and of which the westernmost patch has five fathoms close to it and dries six feet at low water. These reefs are about two cables in extent, with a very narrow six-fathom passage between their eastern boundary and the western edge of the rocks off Village Island. Fortune Point shut in **S.** by **E. ½ E.** by the eastern edge of Sarah Point leads westward of *Hankin Reefs* in passing through Dodd Passage.

Hankin Reefs.

Dodd Passage, between Cunningham Passage and Port Simpson, is bounded by Village Island and *Hankin Reefs* on the **E.** and **SE.** and *Harbor Reefs* on the **NW.** and **W.** It is about a cable and a half in width and half a mile long **NE.** and **SW.**, carrying six or eight fathoms, and is used by the Hudson Bay Company's steamers. The western limits of Dodd Passage are constituted by the *Harbor Reefs*, an extensive patch of rocks and foul ground marked by kelp, and lying almost centrally between Gordon Point, Birnie Island, and Village Island, but somewhat nearer the last mentioned. *A patch of rock* just **W NW.** from Dodd Passage is only occasionally covered; others farther westward are dry at low water. **SW.** from these reefs, between their outer limit and Point Gordon, lies the

Dodd Passage.

Harbor Reefs.

northern entrance to Cunningham Passage, which has a width of a third of a mile in the clear between the kelp on either side. At the outer edge of the kelp, about the northern end of Finlayson Island, the two-fathom curve extends to nearly two cables from the shore, and then the bottom drops rapidly to ten and twenty fathoms.

NW. by **N.** ½ **N.** from the Harbor Reefs, between them and Birnie Island, lies Inskip Passage, half a mile in width and deepening in mid-channel to nearly thirty fathoms. This is the main entrance to Port Simpson and used by most vessels. Directions for its navigation will be found under those for entering Port Simpson. **Inskip Passage.**

In passing between Harbor Reefs and Birnie Island, Lieut. Com. H. E. Nichols, U. S. N., sounded in eight fathoms, rocky bottom, where the British Admiralty chart indicates more than twenty fathoms. It was perhaps a pinnacle missed in the original survey.

Northward from Birnie Island, and lying between it and the mainland, is *Choked Passage*, six cables wide, and so much obstructed by rocks and reefs as to be practically not navigable, unless for small craft and with good local knowledge; although in at least one place a narrow strip of fourteen fathoms water may be carried through.

NW. a mile and a half from the northern end of Birnie Island lies **Parkin Island**, composed of two small high rocks, which is used as a landmark in entering Port Simpson through the Inskip Passage. About **NE.** ½ **E.** from the southern end of Birnie Island two miles lies **Lizzie Hill**, a conical hill on the mainland, eight hundred and seventy feet high, also affording a landmark for navigators.

Eastward from Birnie Island Port Simpson extends in triangular form, indenting the mainland. The northern shore, extending from Choked Passage in an **E SE.** direction about three miles, is fringed by a rocky beach without off-lying dangers, compact and backed by rapidly rising high land. The southern shore is more irregular and less steep-to, the rocks exposed at low water near the eastern part of the bay extending off from high-water mark nearly a third of a mile in some places. This shore from Village Island has a general trend of **E NE.** for about two miles to the head of the bay. From seaward the port is protected by Birnie Island and the reefs. In most of the protected portion the soundings will average about fifteen fathoms, or over twenty fathoms eastward from Birnie Island and northward from Harbor Reefs. **Port Simpson.**

SAILING DIRECTIONS

FOR ENTERING PORT SIMPSON FROM CUNNINGHAM PASSAGE.

I. ***Through Dodd Passage.***—After passing Sarah Point a course which will keep Fortune Point shut in by the eastern edge of Sarah Point astern about **S.** by **E.** ½ **E.** will lead **W.** from the Hankin Reefs. When the vessel is in one with the northern edge of Point Gordon and Village Island bearing, respectively, **W.** by **S.** ¾ **S.** and **E.** by **N.** ¾ **N.**, a **NW.** by **N.** ¼ **N.** course will carry through Dodd Passage into the port clear of dangers. When, on this course, Parkin Island is seen inside Birnie Island bearing about **NW.**, a **SE.** course leads to the anchorage.

II. ***Through Inskip Passage.***—After leaving mid-channel abreast of Point Gordon on a **NW.** course, when Lizzie Hill bears **NE.**, a **NE.** course carries in through Inskip Passage clear of all dangers. When Parkin Island **NW.** comes out inside of Birnie Island, a **SE.** course leads to the anchorage.

FOR ENTERING PORT SIMPSON FROM CHATHAM SOUND.

Navigators bound north may pass outside of all the islands, at an average distance from the shores of not less than two and a quarter miles, until up with Finlayson Island, which may be approached, with caution, to a mile. When Lizzie Hill bears **NE.**, a **NE.** course carries in through Inskip Passage, as before mentioned.

Navigators bound south usually pass by the main channel westward and southward from The Pointers, though a commodious passage exists eastward from them.

On approaching Inskip Passage from the northward, when **Ben Hill**, one hundred and thirty feet high, on the southern shore of the port, comes out north of **Bath Point**, bearing about **E.** by **S.**, an **E.** by **S.** course will carry in clear through the Inskip Passage and at a safe distance from the northern edge of Harbor Reefs. When Parkin Island comes out inside of Birnie Island, as before, a **SE.** course leads to the anchorage.

No attempt should be made to enter the Choked Passage with a vessel unless in charge of a good local pilot.

From Point Gordon three miles **W NW.** lie *The Pointers,** three rocks, of which the southwestern one rises about three feet above high water and the rest are marked by kelp and breakers. There is ten or twelve fathoms quite close to the kelp over a rocky bottom. These rocks were visited by Brundige in 1879 with a small boat. He reports them thirty feet in height (this, if at low water of spring tide, would make them eight feet out at high water,) with no foul ground and sixty fathoms the least water around them.

The Pointers.

Brundige says "Chatham Sound has very little current as far as The Pointers to the north of Port Simpson, not more than one knot, and ships will not require towage to Port Simpson, and not even a pilot if they have a good chart.

"A strong current sets out of Naas and Wark Channels in Chatham Sound and sweeps past The Pointers and then flows out through Dixon Entrance between Dundas Island and Alaska. The current is about two and a half knots per hour." These rocks constitute a serious danger, but when recognized form a landmark for Port Simpson—the entrance of the main or Inskip Passage bearing from The Pointers **E. ¼ N.** three miles.

Five miles **W SW.** from Point Gordon is the **Connis Rock**, rising fifteen feet above high water and apparently bold-to. Between this and The Pointers is the **Main Passage** from the northwestward into Chatham Sound. It is about three and a quarter miles in width and is of considerable depth, no bottom being reported in one place at one hundred and twenty-eight fathoms.

Oriflamme Passage.

The passage westward from Connis Rock is known as the Oriflamme Passage, and between the rock and certain islets eastward from Dundas Island has a width of about two miles and a considerable depth of water.

The commodious passage between The Pointers and Parkin and Birnie Islands, though nearly three miles wide and with plenty of water, has received no special designation.

Having referred to the passages of approach and entrance to Port Simpson, it remains to describe more particularly the anchorage and establishment here situated.

Fort Simpson.

The settlement is situated upon **Port Simpson Cove**, a small indentation within the low, sandy and rocky Fort Point. It consists of Port Simpson itself, and of about one hundred houses of the Chim-sy-an Indians, of whom about a thousand reside here. This is the most important trading post in this region. It consists of a quadrangular stockade 200 by 160 feet, with bastions at its southeast and northwest angles, within which are situated the dwellings, warehouses and post buildings; and a large garden, fenced in, outside of the stockade, where root crops are successfully cultivated.

The land in the immediate vicinity of the fort is comparatively low, and so are the adjacent islands, but high land exists to the northward. The rocks are regularly stratified, mica schists passing into gneiss and granite, containing garnets, pyrite and quartz veins. Gold is reported to exist in the vicinity, but the statement requires confirmation. Except where cleared, the land is covered with a dense growth of timber and the soil is mossy and wet.

The beach to the eastward of the jetty affords, in consequence of the great range of the tides, good facilities for laying large vessels out for purposes of cleaning or repairs.

The cove, port and immediate approaches are shown on British Admirality Chart No. 2426, (corrected to March, 1872,) from earlier editions of which it appears that the stockade has been located by English observers† in

Latitude	**54° 33′ 30″ N.**
Longitude	**130° 26′ 11″ W.**

According to British authorities it is **H. W. F. and C.** at 1^h 30^m, springs rising 17 to 22 feet and neaps 14 to 17 feet.

The magnetic variation was reported at **27° 50′ E.** in 1865, in the edition of 1872 it is indicated as **27° 10′ E.**, in 1881 the U. S. Coast Survey found it to be **27° 54.′1 E.**

The anchorage is situated **NW. by N. ¼ N.** from the entrance of the stockade, somewhat over a quarter of a mile, and about a cable length from the three-fathom curve in any direction.

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*Meade, Hydrographic Office, U. S. N., Hydrographic Notice No. 13, 1869, calls them **Five Fingers.**

†Observations by the U. S. Coast Survey in 1881, with a latitude of **54° 33′ 28″ N.**, resulted in placing the longitude of the astronomical station at **130° 25′ 19″.5 W.** of Greenwich. The station was on the west side of the principal gate between the outer fence and the stockade.

The U. S. Coast Survey magnetic station of 1881, occupied by Lieut. Com. H. E. Nichols, U. S. N., was almost directly in front of and about two hundred feet from the new house erected for the bishop of the diocese. By compass the

S. end of Birnie Island bore	**N. 59° W.**
N. end of Finlayson Island bore	**S. 79° W.**
Church spire bore	**S. 16° W.**

The station is about three hundred yards from the main gate of the stockade. It was marked by a 10 × 10-inch stick of pine timber painted white and standing about three feet above the surface. The legend "U. S. Coast Survey, 1881," was cut on its seaward face.

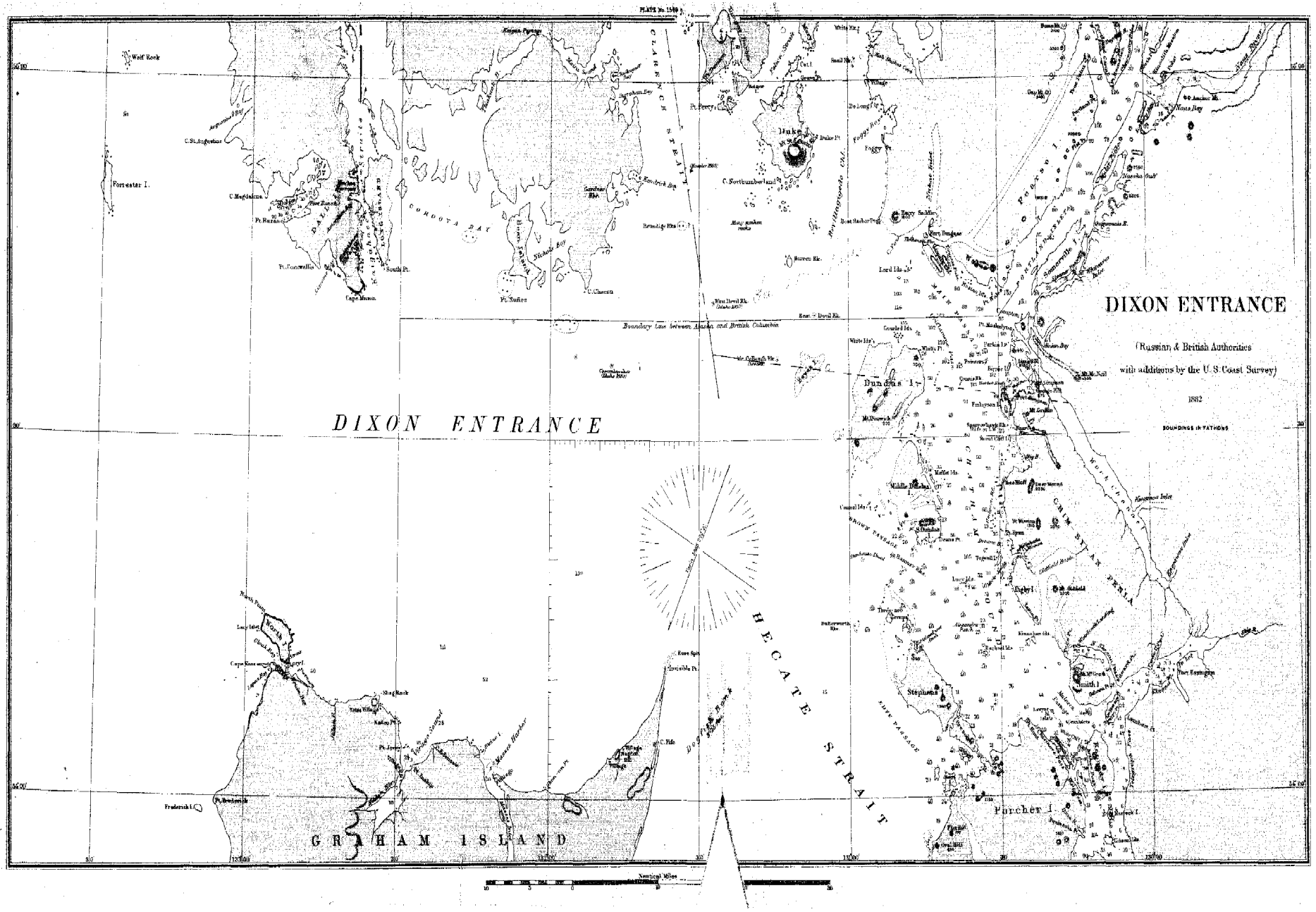
The bottom is sandy and the depth eight or nine fathoms. The situation is well protected from most winds. This is the most northern seaboard port and anchorage on the British Columbian coast and the seat of considerable barter and trade.

"It embraces over four square miles of water from four to twenty fathoms deep, with muddy bottom, good holding-ground and free from rocks and shoals. It is easy of access from the sea, having no strong tidal currents, and well sheltered from all winds except the west, which here seldom blows. The prevailing winds are southwest and northwest, from which the harbor is perfectly protected. During seven months, including the winter of 1879–80, the highest sea in the harbor was nine inches, measured on the tide staff in the most exposed part of the harbor. From three months observations the rise and fall of tide was found to be twenty-three feet at springs and fifteen to sixteen at neaps, scarcely influenced by winds."*

*Report of Captain Brundige, 1880. p. 155. See also appendix herewith for meteorology. He also remarks, in regard to the climate, "I was reliably informed at Port Simpson that the months of June, July and August are the finest; that in September, October and November there is a considerable amount of rain, cloudy weather and strong winds, but with very little fog, similar to the northwest coast of Ireland. During December, January and February strong gales, cold and frost, rain and snow, the latter falling sometimes to a depth of two feet, but does not remain long on the ground. It is unusual for the thermometer to fall below zero. March, April and May comprise the principal rainy season at Port Simpson, but, strange to say, the climate of the region hereabouts varies very much, for ten to fifteen miles off it is quite different."

NOTE.—On some recently corrected English Admiralty charts there are some arbitrary changes of names which have come to hand too late to be incorporated in the text. They will be found in the index. Most of them are of little importance and refer to islands in the vicinity of the Inland Passage in British Columbian waters. See also **Addenda**, at end of text, for material received during the printing of the text.

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DIXON ENTRANCE
(Russian & British Authorities
with additions by the U. S. Coast Survey)
1882
SOUNDINGS IN FATHOMS
DIXON ENTRANCE
HECATE STRAIT
GRAHAM ISLAND
Duke I.
Dundas I.
Forrester I.
Wolf Rock
Boundary line between Alaska and British Columbia
Nautical Miles

THE COAST OF ALASKA.

THE COAST AND INLAND WATERS OF THE ALEXANDER ARCHIPELAGO.

I. DIXON ENTRANCE TO CROSS SOUND.

In the present state of knowledge it is impracticable to attempt to do more than give a very brief outline of the hydrographical characteristics of that congeries of straits, inlets, islands, rocks and passages composing the

ALEXANDER ARCHIPELAGO,

which extends northward from latitude 54° 30′ N. through nearly five degrees of latitude and seven of longitude. The information on record is, in nearly all cases, of the most general character. The incomparable Vancouver is still the chief and most trustworthy authority, and for the rest it is necessary to glean from the atlas and memoranda of Tebienkoff and a great number of scattered authorities details in regard to special localities; which details—often recorded by persons not specially qualified for, or interested in, exploration, except so far as it related to their own commercial enterprises—must usually be taken as approximations only.

Conflicting statements, confusion of names, discrepancies between charts and verbal descriptions are so abundant and so perplexing as to render the attempt to harmonize them both difficult and unsatisfying. Hence it is premised that, in all cases where a definite authority is not cited, the information here given is the resultant of an examination of the various authorities whose names will be found in Appendix 1, and for the accuracy of which it is impossible to vouch. It it believed, however, that reference has been made to almost every authority on the subject whose observations are entitled to consideration, and that, however imperfect the result of this inquiry may be, it nevertheless represents fairly the present state of the knowledge of this region.

Another difficulty has arisen which it is not believed could find a solution which would prove universally acceptable. The irregularity of the channels passing through the archipelago is such as to render the order in which they should be taken up difficult to decide. For some reasons it seemed advisable to follow the main lines of commerce from Dixon Entrance to Sitka and Wrangell, and make the rest subsidiary, at the cost of losing all geographical continuity in the description.

It has been decided, however, not to adopt this course, but, while summarizing the commercial routes, to take the various portions of the archipelago in geographical sequence from the south northward, by groups naturally distinguished among the islands, and from the shore of the mainland seaward, or from the east to the west.

The archipelago, as a whole, extends in a generally **NW.** and **SE.** direction more than two hundred and fifty miles; the inland waters which may be said to belong to its system extend at least a hundred miles farther. The greatest breadth from the mainland to the ocean, **SW.** and **NE.**, is about eighty miles. The number of islands included in it is very great; an approximate estimate of those definitely placed on the charts puts it at eleven hundred, which, were all existing rocks and islets enumerated, would doubtless be a very inadequate estimate.

These islands are situated in a series of natural groups formed by the intersecting channels. These groups are again separated into two great groups by the sheet of water extending from the Hazy Islands to the mouth of the Stikine River, a strait which has received the name of **Sumner Strait.*** This passage having but one important curve is the only direct northeasterly channel from the Pacific to the mainland, included in the region between Cross Sound and Dixon Entrance. This region it divides into subequal portions.

The groups of islands included in the southern portion, enumerated in the order in which they will be taken up, are as follows:

Islands at the eastern end of Dixon Entrance.
Revillagigedo and associated islands.
Etolin, Zarembo and associated islands.
Prince of Wales and associated islands.

Those groups to the northward of Sumner Strait are—

Mitkoff and associated islands.
Kupreanoff and associated islands.
Kuiu and associated islands.
Baranoff and associated islands.
Admiralty and associated islands.
Chichagoff and associated islands.

The islands to the northward of Sumner Strait have a general trend of **NW.** and **SE.**, while those to the southward of the strait trend more nearly **NW.** by **W.** and **SE.** by **E.**

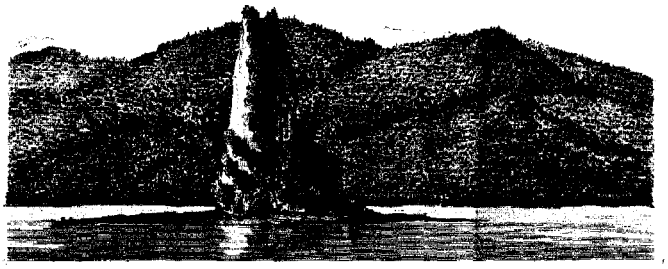
The topographical features of the archipelago are similar to those of the mainland to the eastward, but less elevated; and its hydrographic characteristics are such as would be developed by a submergence of the lateral ridges of a sharply broken and much elevated system of coast ranges, such as exists from Puget Sound to the Aliaska Peninsula, without important topographical modifications of any kind. Most of the islands are high, the peaks and ridges showing a remarkable uniformity in general altitude. A few peaks rise conspicuously above the rest, but these are marked exceptions. The country is exceedingly rough and broken,—the sharper inclinations, on the whole, facing toward the mainland. The higher summits are sharp, notched, irregular, and showing little if any modification by erosion. The lower summits are more frequently somewhat rounded, but, together with the flanks of the former, are so masked in a dense growth of timber as to conceal most of their characteristic features. Deep and narrow gorges; precipitous cliffs; steep mountain sides, scored by avalanches and land-slips; small level plateaus of accumulated washings from the highlands; occasional districts of moderately low but rolling country,—these are prominent features in the topography.

The snow-line in mid-summer reaches an altitude varying, according to local conditions, from two thousand to five thousand feet. Glaciers are formed in favorable localities, such as are abundantly afforded by narrow gorges of the coast ranges whose walls perennially ward off the sun. Toward the northern part of the archipelago, on the continental shore, where lofty ridges above the snow-line supply the necessary feeders, these ice rivers often attain great size and even reach the water side. In most cases, for several thousand feet of elevation, they force their way between densely wooded hillsides. Others fail at a considerable altitude and manifest themselves in glacial torrents, frequently forming cascades of great beauty. The proximity of such streams is invariably indicated by the milky stratum which covers the denser sea-water, sometimes for miles from the embouchure. This condition of a stream of fresh water may be taken as unfailing evidence that it somewhere receives the discharge from a glacier.

In the islands of the archipelago, however, the land does not usually reach a sufficient altitude to retain snow throughout the year, and, except on the higher peaks, the entire absence of snow forms a remarkable feature of the summer landscape. From the great amount of rain-fall at certain seasons fresh water is readily obtainable in all parts of the archipelago, and nowhere does there seem to be any difficulty in procuring wood for fuel, timber suitable for spars or for most purposes of construction or repairs.

The hydrographical characteristics form a parallel to the topographical features above mentioned. The continuation of the steep inclines and narrow gorges below the sea level has resulted in that unrivaled system of narrow straits with deep soundings which characterizes the northwest coast of America from Puget Sound to Cape Spencer. To many of these contracted passages the term "canal," employed by Vancouver, is eminently applicable. Again, the rugged nature of the ridges and peaks, and the singular absence of plains or extensive plateaus, is paralleled by the numerous rocks and reefs surrounded by deep water, and the general absence of extensive shoals except at the mouths of streams or rivers fed by glaciers.

* In honor of the lamented statesman, to whose endeavors is chiefly due the acquisition of this Territory by the United States.



New Eddystone Rock, Behm Canal.

(From Vancouver in 1793)



Entrance to Cloak Bay Cape Knox NE. by E. ½ E.

(From a Sketch by Ingraham in 1792)



Entrance to Cox Strait, Lucy I. SE. by E. ¼ E. 4 Miles.

(From a Sketch by Ingraham in 1792)

DIXON ENTRANCE.

The Alexander and Columbian archipelagos are separated from each other by the broad sheet of water known as Dixon Entrance, a name which has now obtained almost universal acceptance. The name Dixon's Straits was applied to Dixon Entrance and Hecate Strait, collectively, by Dixon himself in 1787, and about the same time, to the same bodies of water, Meares gave the name of Douglas Entrance, and to the northeastern portion the title of Buccleugh Sound.*

Dixon Entrance lies between latitude 54° 0′ and 54° 45′ N. and longitude 130° 30′ and 133° 0′ W.,—its limits being on the one hand the northern terminations of Queen Charlotte Islands and the Dundas Group, and on the other the southern extremities and shores of the Alexander Archipelago and a small portion of the mainland. Its western extremes may be said to be Cape Knox on the south, and, on the north, the headland projecting southeastward from Port Bazan.

From the northern part of the entrance lead several bays, straits and sounds, while from the eastern portion extend Hecate Strait, Chatham Sound and the Portland Canal.

The waters of the entrance are for the most part clear and free from dangers, but some rocks of doubtful position have been reported in its northern part. A brief description of the southern portion is in place here.

The NW. extreme of Graham Island of the Queen Charlotte group is Cape Knox,† which on later charts is represented as a somewhat prominent cape extending to the westward of a line drawn from Point North to Point Frederick, (S. 14° W., according to Vancouver,) but according to the charts of Dixon, Vancouver, Marchand and Dawson, the extremity of the cape would fall within this line. The cape is low, with a bold rocky coast and a small islet or dry rock W. two and a half miles from it. Between this rock and the cape *a continuous reef or bar of foul ground* is indicated by English authorities, and extends in the same direction about half a mile beyond the islet. On British Admiralty Chart No. 2168 a sketch of the adjacent waters (under the name of **Parry Passage**) is given, on which the geographical position of Cape Knox is stated to be

Cape Knox.

Latitude	**54° 15′ N.**
Longitude	**133° 03′ W.**

Upon advance proof sheets of Dr. George M. Dawson's new chart of the Queen Charlotte Islands, published by the Geological Survey of the Dominion of Canada in their Report of Progress for 1878–'79, a different representation of Cape Knox is given, though upon a very small scale. It is there represented as a bold, somewhat elevated, narrow and sinuous point extending about a mile and three-quarters from a bit of low ground at the NW. extreme of Graham Island, and in a nearly SW. by W. ½ W. direction. From its extremity in a generally SW. direction four miles extend three dry rocks or pillars. No shoal is represented about or between them, and they are indicated about a mile and a third from each other, as is the nearest one from the point of the cape. The extremity of the cape is placed in about

Latitude	**54° 10′.8 N.**
Longitude	**132° 58′.0 W.**

The cape, from the topography thus indicated, must appear from some points of view like an island. The bight to the southward of it appears to have rocky shores, and has been named on Dr. Dawson's map **Lepas Bay.**

Beyond the bay to the south and west is **Point Frederick** of Vancouver, who supposed it to be **Frederick Island** of Ingraham. It is also called by the latter name by Dawson, being the western extreme of an island. The west coast of Queen Charlotte Islands being practically unknown except at the western ends of Skidegate and Houston Stewart channels, it cannot be said with certainty whether this island is that of Ingraham or not until its position is determined. He states, however, under date of July 9, 1791, that, being in latitude 53° 47′ N., the extremes of the land bore N., by W. ½ W. and SE. by E., respectively, and Frederick Island bore E SE. five leagues distant. Behind this island, named for his son, he discovered a fine commodious inlet, which his officers named **Port Ingraham**, which he places in latitude 53° 47′ N., and which to this day is not indicated on any published chart.‡

Port Ingraham.

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* Spelled **Bucclugh** on his charts. The former had, however, been named previously by Bodega, who, in 1775, called it **Perez Inlet** after Juan Perez, the original discoverer. It has also been termed **Dixon Sound.** On some Russian charts it has received the name of **Granitza** (Boundary) **Strait,** and it is called **Ky-gah-ni Strait** by Tebenkoff.

† **Hope Point** of Ingraham in 1791.

‡ Ingraham gives many details in an approximate way for the west coast of these islands. His latitudes in general are quite accurate where we have the means of checking them by other surveys, and may be supposed to be so elsewhere, as in this locality. The following names have been applied by him to geographical features on the western shore of Queen Charlotte Islands; their latitudes from his general chart of 1792 follow the identifications:

Hope Point, (Cape Knox)	Lat. 54° 11′ N.
Cunneyah's Strait, (Cox Strait)	" 54 12 "

The northern entrance of Port Ingraham is formed by two high bluff points with some small islets between them. Ingraham obtained seventeen fathoms here. Northward from the entrance on the coast is a large reef of rocks, and westward and southward from the southern point of entrance along the shore of Frederick Island are a large number of sunken rocks. The port extends about six miles from the entrance in an easterly direction, is about two miles wide, with four small islets near the head. In the vicinity of the islets is some kelp. At the head is a beach and nine or ten fathoms water. Toward the head the port curves more to the eastward. Half-way toward the head Ingraham got sixty-four fathoms. The passage eastward of Frederick Island has several islets in it and six fathoms water. Some kelp is noted in the channel. Ingraham placed this south entrance in about 133° 05′ W. of London.

Point North. According to Dawson's sketch, N. by W. ¾ W., four and a half miles from Cape Knox, lies Point North, named by Vancouver,* practically the southern headland of Dixon Entrance. Its geographical position is

Latitude ..... 54° 15′.0 N.
Longitude ..... 132° 56′.5 W.,

according to Dawson, while Tebienkoff places it 12′ farther to the westward. There are some rocks and a small islet close to it, but apparently no outlying dangers. It is moderately low and forms the northwestern extreme of North Island, named by Dixon.† It is about five miles long W NW. and E SE. and nearly two and a half miles broad. The land is moderately low and covered with a somewhat scattering growth of trees.

North Island.

A small, high, round island rather close to North Island, NE. ½ N. from Cape Knox, a prominent object in approaching, was named Thrumb Cap by Ingraham.

About half-way between Point North and the entrance to Virago Sound, on a line connecting the two, Captain Brundige obtained soundings in sixty-five fathoms about four miles from shore and thirty fathoms close in to the shore at Point North. The shores of the island are bold to.

Between the southern shore of this island and the northern shore of Graham Island lie Cloak Bay and Cox Strait.‡ In 1791 this was entered by Marchand in the *Solide*, and Captain Chanal of this party prepared a sketch of the passage which, though differing in many details from Dawson's chart, appears to have better claims to consideration than the plan given on British Admiralty Chart No. 2168, under the name of Parry Passage, which is evidently a mere rough sketch.

Cloak Bay and Cox Strait.

Island not named, (Frederick Point of Vancouver)	Lat.	54°	00′	N.
Frederick Island at entrance of Port Ingraham	"	53	42	"
Port Ingraham, (interior)	"	53	47	"
Island not named, (Hippa Island, of Dawson?)	"	53	34	"
Rennell Sound, (large island in entrance)	"	53	20	"
Point not named, (Point Buck of Vancouver)	"	53	10	"
Great Sound, (west entrances of Skidegate)	"	53	05	"
Port York, (Port Kuper)	"	52	55	"
Entrance not named, (Tasoo Harbor?)	"	52	45	"
Port Montgomery, (unnamed entrance Vancouver)	"	52	35	"
Port Perkins at entrance	"	52	24	"
Magee Sound at entrance	"	52	32	"
Koyah's Strait, (Houston Stewart Channel)	"	52	02	"
Cape St. James	"	51	55	"

It is to be observed that the figures and sketches given in Ingraham's Journal of 1791 are much reformed, corrected and improved in his general chart of 1792. He compared notes with Vancouver, whom he met at Friendly Cove, Nootka Sound,—a fact which explains the attempt to retain his unpublished name for Point Frederick. On the eastern shore of the Queen Charlotte Islands the following names of Ingraham may be noted:

Point Rose or **Sandy Point.**
Skithkits, (Skidegate Inlet.)
Cummashawaa's Harbor, (Cumshewa Inlet.)
Cummashawaa's Bay, (between Point Vertical and Atli Island of Dawson.)
Kleiw's Point, (point east of Atli Inlet, latitude 52° 44′.)
Kanskeeni's Sound or **Smoke Bay**, (Juan Perez Inlet.)
Kanskeeni's Point, (Scudder Point.)
Port Uoah, (Skincuttle Inlet.)
Port Sturgis, (Carpenter Bay.)

*The **Breakers' Point** of La Perouse, and **Cabo de St. Margarita** of Perez in 1774.

† Afterward, by Caamano and Vancouver, called **Langara Island**, a name retained on many charts.

‡ This bay was discovered and named by Dixon in 1787, and the passage connecting it with Dixon Entrance to the eastward was discovered and named **Cox's Channel** by Douglas two years afterwards. It was called by Ingraham **Cunneyah's Strait**, for an Indian chief with whom he traded in 1791, and who lived on the south shore. Many years later the whole was named **Parry Passage** by some English navigators.

Cloak Bay is about three miles long **E.** and **W.** and two and a half miles wide. It is protected from all except westerly winds. Cape Knox forms the southern headland of the entrance, from which **Lacy Islet**, the northern headland according to Dawson, bears about **NW.** by **N.** ½ **N.** three miles. There are from thirty to seventeen fathoms in the middle of the bay over a bottom of sand, gravel and shells. In the **NE.** angle of the bay is a small island, behind which a cove with a gravel beach exists, convenient for a boat harbor. Some rocks are indicated near the northern shore of the bay.

At the **SE.** angle is the entrance to Cox Strait,* three-quarters of a mile wide, but contracted to less than three cables by *a reef or bank* which makes off to the **N NW.** from a point on the southern side of the entrance. In the narrowest part, however, the soundings range from thirty-two to forty fathoms over a bottom of hard sand and shells. The northern shore of the passage is bold-to. The strait is less than two miles in length **E.** and **W.**, and varies from one mile to half a mile in breadth.

It is separated into two arms by **Lucy Island**, somewhat less than two-thirds of a mile long and one-third of a mile broad. The northern arm is not much over a cable wide; the southern or main channel is more than half a mile wide. The soundings in the main passage are thirty fathoms, with a rocky bottom. The shores, except in the narrow western entrance, seem to be clear of dangers. The northern arm, while extremely narrow, is still further obstructed by *foul ground* making off to the northward and eastward from the eastern shore of Lucy Island less than half a mile, and a similar bank from the opposite shore of North Island. There is, however, a narrow channel, having four to six fathoms, over hard bottom, at the eastern end, and this increases to fifteen fathoms in the western part of the arm.

A small islet lies about a mile to the eastward from the eastern entrance of this arm, and *a rock awash* is reported **NE.** two miles and a quarter from the same locality, and about a mile and a quarter from the southern shore of North Island.

About **S SE.** from the **SE.** end of Lucy Island a cove, possibly **Puerto Florida Blanca** of Spanish authors,† is indicated on the Graham Island shore under the name of **Bruin Bay**, with anchorage in ten or twelve fathoms a third of a mile from the shore. To the **N.** and **W.** of the **NW.** end of Lucy Island, half a mile, is a cove, ‡ which is probably the **Beal Harbor** of Douglas, where he reports having anchored in nineteen fathoms half a cable from the shore, and completely land-locked. A stream falls into this cove.

Douglas found no bottom with eighty fathoms of line in mid-channel at the eastern entrance of the main passage, but near the shore of Lucy Island he found twenty and thirty fathoms.

TIDES.

The tide runs very strongly through the strait.

According to Douglas and Marchand it is **H. W. F.** and **C.** about $12^h\ 20^m$ a. m.,—spring tides rising sixteen feet, neaps ten feet. The currents follow the direction of the shores,—the flood coming from the westward and the streams running about six hours. Douglas reports the night tides as rising two feet higher than those of the day.

The best locality for anchoring is the middle of Cloak Bay, in seventeen fathoms. Should a westerly gale arise, a lee may be found in Cox Strait; but the bay is fully protected from all other winds. The chief objection to the anchorage seems to be the absence of any very good holding-ground and the excessive depth of water.

Tebienkoff gives the longitude of the entrance to Cloak Bay as 133° 9′ **W.** A comparison of other authorities would place the entrance in

Latitude	54° 16′ **N.**
Longitude	133° 02′ **W.**

or, according to Dawson, in

Latitude	54° 12′ **N.**
Longitude	132° 58′ **W.**

There is considerable population in this vicinity, and several authors speak of remarkable wooden carvings of great size on the North Island shore, or attached to the winter dwellings of the natives. Birds, whales, salmon and other fish and shell-fish are reported as very abundant.

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* Named **Cox's Channel** by Douglas in 1789, and **Canal de Florida Blanca** by the Spaniards in 1792.

†The identification of names applied by the Spaniards in this region is very difficult since the maps, resulting from the somewhat detailed surveys of Galiano and Valdes in 1791 and 1792, were never published. Only a general sketch of the coast-line was issued by the Spanish Government.

‡ Douglas Cove of Ingraham in 1791, and called **Henalung Cove** by Dawson. It is stated to be a good anchorage in Imray's North Pacific Pilot, Vol. I, Part I, p. 381.

From the eastern entrance to Cox Strait the trend of the shore is about **E.** two miles and a half to a small point, west from which is a rocky column ninety-five feet high, called **The Pillar**; in its vicinity are other visible rocks near the shore, and the space between the visible rocks at the eastern extreme of Bruin Bay and The Pillar is called **Pillar Bay**, though the indentation of the shore is slight. On the east side of the eastern headland of Pillar Bay is a good boat harbor.

East from The Pillar, three and a half miles, is the mouth of **Jalun River**, with some visible rocks close to the shore on each side of it. Its mouth at high water forms an excellent boat harbor. Thence the trend is about **NE.** by **E.** five and a half miles to Klaskwun Point, which is backed by a rounded hill two hundred feet high, visible for a long distance, and off which, in a **N NE.** direction, **Shag Rock**, dry and elevated, lies at a distance of half a mile. East from Klaskwun Point is a small bight with rocks near its shores. On this is situated the Yatsa Indian village. A small stream comes in here.

The shore hence trends nearly due **E.**, and is fringed with rocks close in, mostly visible. These are particularly numerous and large, forming islets along the coast at a distance from the village of some two and a half miles, where **Point Naden** is formed by the shore changing its trend to the **SE.** At a distance (according to Dawson) of two and a half miles from Point Naden is Point Jorey, the western point of entrance of Virago Sound.

Virago Sound.

This was examined by Inskip in 1853, whose sketch is given on British Admiralty Chart No. 2168.* The general direction of the sound is nearly **N.** and **S.** The outer portion† is about three and a third miles long, funnel-shaped, with its greatest width at the entrance—about three miles. The shores are low and densely wooded.

From the head a narrow passage leads into an interior basin called Trincomalee Harbor;‡ which receives several streams and has a depth of ten fathoms, shoaling to sandy shores. The soundings recorded show that the sound shoals from ten fathoms at the entrance to three or four fathoms a mile northward from the head. The eastern headland is **Cape Edensaw**, from which, according to Inskip, **S.** by **W.** ½ **W.**§ three miles is *a shoal patch* with two and a half fathoms on it and eight fathoms immediately **NW.** from it. To the southward there is deeper water, and the passage contracts to two-thirds and then to one-third of a mile, the western half of which is occupied by *foul ground*. At the most contracted part, formed by Point Mary on the west and Point George on the east, are two Indian villages. It should be entered with great caution, as the charts are very imperfect.

Trincomalee Harbor.

The shores of the sound are bordered by *shoals* except between points Inskip and George, and a channel carrying not less than seven fathoms close along the western shore leads **S.** by **E.** from Point Mary. It is stated on Inskip's sketch that the geographical position of Cape Edensaw is

Latitude ..... **54° 04′ N.**
Longitude ..... **132° 14′ W.,**

but according to Dawson it is

Latitude ..... **54° 04′.5 N.**
Longitude ..... **132° 23′.0 W.**

The anchorage is about two miles in a southwesterly direction from Cape Edensaw, in six fathoms, off Point Jorey, which bears about west a mile from the anchorage, with several islets about it.

From Cape Edensaw the general trend of the land is **NE.** by **E.** four miles, when it rounds to the eastward and southeastward, everywhere low, rocky or covered with boulders, and without sandy bays. The water is shoal well off-shore and shows wide fields of kelp. The trees along the shore are not of great size and are interspersed with occasional grassy spaces. For three miles farther it is bordered by islets, one of which was named by Dawson Striae Islet, to an opening known as Masset Harbor, or Port Estrada of early Spanish navigators,‖ mapped by Dawson under the name of Masset Sound, where anchorage is reported. This entrance,¶ even more than the last, is obstructed by *bars and shoals*, while deeper water is to be found

Masset Harbor.

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* It is the **Port Mazarredo** of Spanish navigators, who, however, did not survey it; the **Port Crafts** of Ingraham, and probably **M'Intire's Bay** of Meares. The Spanish name is sometimes spelled **Mazaredo**, and was given in honor of Don Joseph de Mazarredo, of the Spanish Navy.

† To an indentation on the western shore of this outer part of the sound the name **Hussan Bay** has been applied. It appears to be full of rocks.

‡ Subsequently named **Naden Harbor** on Dawson's Chart. On some charts **Naden Point** of Dawson is called **Cape Naden.**

§ **SW. ½ S.** according to Dawson.

‖ **Hancock River** of Crowell and Ingraham in 1791.

¶ "Masset is a bar-harbor with not less than five fathoms, and is easy to approach; is about thirty miles west of Rose Point on the north of Queen Charlotte Islands. I found good soundings all along the coast, and having head winds sounded off and on; had thirty fathoms about eight miles off-shore, when lead dropped into deep water. This whole coast is free from rocks, with a beautiful sand beach, and the current is not more than one and a half knots."—(*Report of Captain Brundige, p.* 156.)

within. It forms a lee for winds from **SE.** round by **S.** to **NW.**, and has three to six fathoms outside and three fathoms on the bars, while just within the bars as much as ten fathoms is reported **SW.** by **S.** from the eastern point of entrance, on which are several Indian villages. No use can with safety be made of this entrance without local knowledge or a pilot.

The strength of the tide renders this a poor stopping place. Owing to the great expansion of the upper part of Masset Inlet the tide continues to run up opposite Masset for about two hours and a half after it is falling by the shore, while the ebb runs out for about three hours after the tide has begun to rise on the beach.

The chief Indian village is called Ut-ti-was, and here is situated a Hudson Bay post and mission. The rise and fall of tide is about fourteen feet.

This arm presents in its development, as indicated by Dawson, one of the most extraordinary of the many fiords of this region. From the entrance a channel, known as **Masset Inlet**, averaging about a mile and a quarter in width and ten or twelve fathoms in depth, extends to the southeastward and southward twenty miles, when it expands into a broad sheet of water about six miles **NW.** and **SE.** by fourteen miles **SW.** by **W.** and **NE.** by **E.**, with numerous arms and fed by numerous streams, several of which are supposed to drain large lakes. Hills rising to fifteen hundred feet are found southward from the basin, while eastward from the inlet, as a whole, the country between it and Hecate Strait is described by Dawson as low, level and densely wooded.

A very crude sketch of Masset Harbor is given on British Admiralty Chart No. 2168, where the shores are represented as low and thickly wooded, everywhere bordered by shoals extending off from a mile to a quarter of a mile on the west, and to nearly two miles northward from the shore eastward from the opening.

The whole northern coast of Graham Island is very slightly known, and the indications of the charts must be taken as merely approximate. From the entrance of Masset Inlet the coast forms a pretty even curve (without marked indentations) of which the chord trends about **SW.** ¾ **S.** and **NE.** ¾ **N.** The shores are sandy with a few small rocky points.

NE. ¾ **N.** about twenty-two miles from the eastern headland of Masset Harbor lies **Invisible Point.***

This point has a general **N.** by **W.** direction. About nine miles **S.** by **W.** from the northern end of the point is **Nagdon Hill**, a small bluff elevation, (the Tow Hill of Dawson,) which is stated to appear from a distance as an island, the land connecting it to the southward with Graham Island as well as the northern portion of the point being more low and wooded. The configuration of the shores is very differently represented on different charts, of which Dawson's is the most trustworthy. According to Russian and English authorities there would appear to be anchorage to the southeast of the point, with off-shore winds; but Dawson's chart would not favor this view.

The latitude of the end of the point, as given by different authorities, varies five or six miles. According to British Admiralty Chart No. 1923 A (corrected to December, 1874) its geographical position is

Latitude	**54° 13′ N.**
Longitude	**131° 36′ W.;**

but, according to Dawson, it is

Latitude	**54° 10′.5 N.**
Longitude	**131° 37′.5 W.,**

and it should bear, in the latter case, **E NE.** forty-seven and a half miles from North Point of North or Langara Island.

From Invisible Point, according to the last-mentioned authority, Rose Spit (the Point Rose of Meares) curves in a generally **N.** by **E.** direction nearly two miles, with an average width of less than a mile; but older charts represent it as trending more to the northward, especially Tebenkoff, according to whom its direction is **NW.** by **N.** ½ **N.** This is, however, probably wrong. Douglas states that when in the vicinity of the north point of the peninsula he saw a "sandy spit level with the water which ran to the northward as far as the eye could reach from the masthead." It would appear that the spit is a low sand-bar without vegetation, and, in its doubtful position, constitutes a serious danger.† ***Rose Spit.***

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* **The Punta Ymbisible** of Caamano and Vancouver. The name of **Point Rose** was applied by Meares to the low sandy spit which makes off from the point, and not to the point itself. In his transcript of the Iphigenia's log the name appears as **Point Ross.** It has also been called **Rose Spit Point, Nai-Koon** (a Haidah word meaning long nose, applied to the point) and **Masset Spit** by English authorities, and **Sandy Point** by Ingraham.

† "I examined Rose Spit and found a strong current of about two knots. This spit or sand-bank extends out about four or five miles, with boulders and timber or large trees buried in the sand. Soundings were found to be gradual from forty fathoms down to five fathoms close along side; also good even soundings all the way to Masset with sandy bottom. Ships could anchor under Invisible Point in a **SE.** gale in five to eight fathoms."—(*Report of Captain Brundige, p.* 156).

From the vicinity of Masset a bank of sand with not exceeding twenty fathoms extends to the north and east, trending with Rose Spit, and on the east side of the island extending toward Cumshewa, its eastern margin reaching the middle part of Hecate Strait. The average depth of water is from seven to ten fathoms, but there are much shoaler spots. This bank was named Dogfish Bank by Ingraham in 1791. Near its eastern edge he locates, in latitude 53° 50′ and about thirty miles SE. *true* from Invisible Point, *a rock or shoal* on which the ship *Margaret* struck in 1792, drawing thirteen feet. Near the spot he notes three fathoms, deepening to five, seven and twelve eastward.

Margaret Rock.

In regard to the region to the NNE. of this spit irreconcilable differences appear between the charts constructed by or agreeing with those of Vancouver and the later charts of the British Admiralty. These differences relate to the latitudes of those points of land bordering on that arm of Dixon Entrance which stretches toward the mouth of Portland Canal. The discrepancy is especially marked at the northern edge of the Dundas Islands, Cape Fox, Point Wales and vicinity; on the average it amounts to about five miles in latitude. In this and other cases of discrepancy, when no definite authority of later date is assigned for the changes, Vancouver's bearings and latitudes will be assumed as the least unsatisfactory. The changes referred to are introduced on the earlier editions of British Admiralty Chart No. 1923 A,* and were adopted on Chart No. 225, U. S. Hydrographic Office, to which subsequently a fly-leaf with other changes was attached, but in such a manner and on so small a scale as to serve but little to clear up the discrepancies.

According to Vancouver the northwestern edge of the Dundas Islands (of which the smaller western one was named **Isla de Zayas** by Caamano) bears about N. (or N. by E. from Dawson's position) twenty-five miles from Rose Spit. Very little is known of their form and extent, and the positions assigned to them are extremely discrepant on different charts.

Dundas Islands.

There are three principal bodies of land or islands, called respectively **North, Middle and South Dundas** islands, though there are doubtless a large number of islands included in the group, but close together and yet unsurveyed, besides Zayas Island.

According to local navigators of the Hudson Bay Company there is a good wide channel between North and Middle Dundas, with twenty-five fathoms water clear through. In steaming out from Port Simpson this passage is well open, but on the Admiralty Charts is represented as choked with islets and rocks. They also report anchorage on the SW. side of Zayas Island. Lieutenant Commander Nichols, U. S. N., when commanding the U. S. Coast Survey steamer *Hassler* in 1881, states: "As we passed Cape Fox, Zayas Island appeared flat and heavily timbered and probably three or four miles in extent. At ten miles distance no outlying rocks or islands could be seen until Zayas Island bore about S., when a small wooded island opened out on the western side, which, as we changed its bearing, appeared about a mile off shore." This may have been a floating tree. H. E. N.

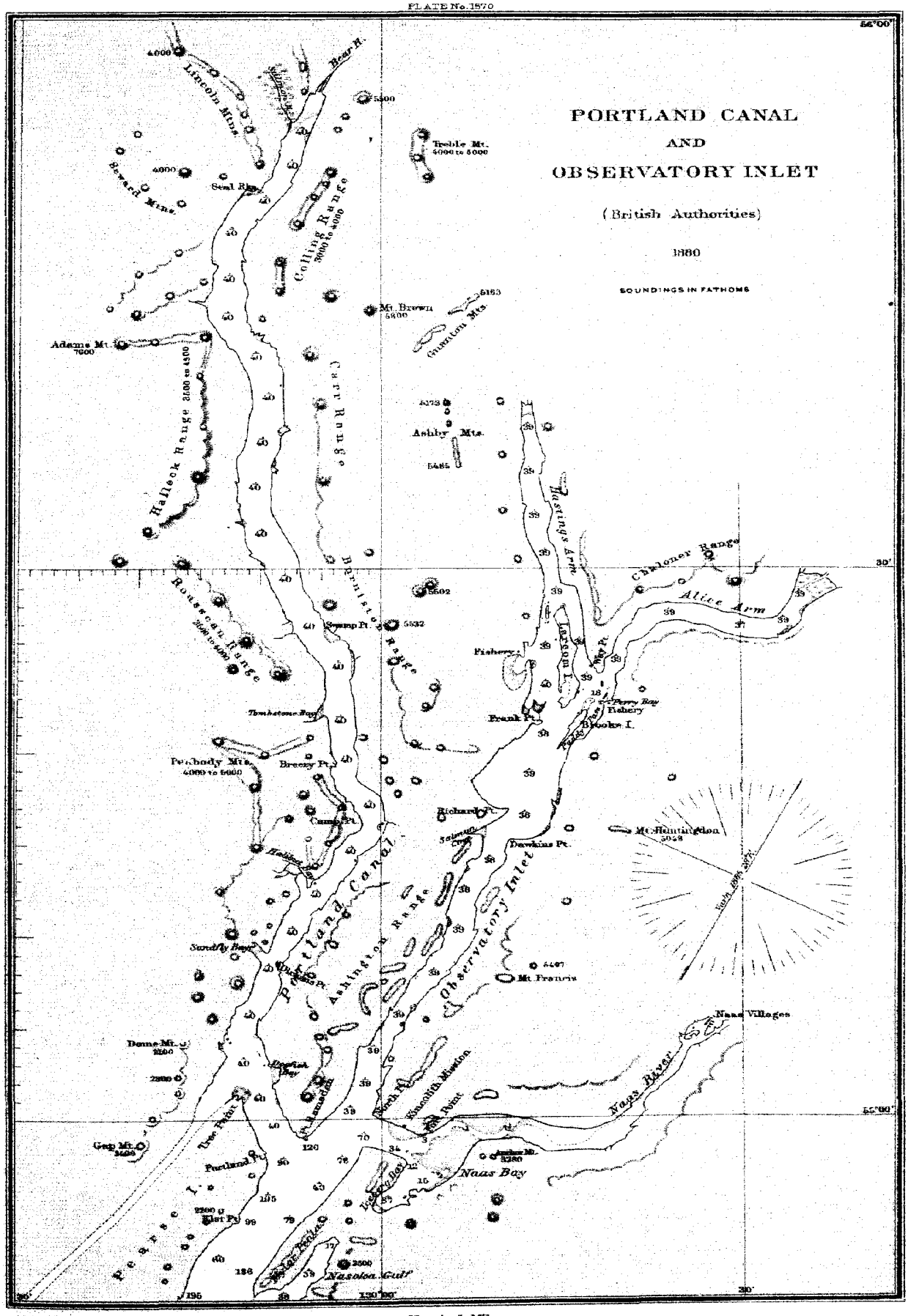
The Russian chart (IX Tebienkoff) of 1849 represents Zayas Island with more detail than any other, even much later charts. According to this it is sub-triangular in shape, about three miles wide on its northern shore, indented on its western side, and tapering to a point at its southern end, a distance of about four miles and a half. A dry rock is represented in mid-channel between Zayas and North Dundas, two more rather close in on the north shore of Zayas, and three small islets less than a mile from its NW. extreme. Besides these a small islet (surrounded by a dotted circle and presumably sunken) is placed by Tebienkoff about three miles west from the NW. cape of North Dundas and two miles N. from the NW. cape of Zayas, which may be the same as a "small islet about three miles N. and E. from Zayas," noted by Nichols. Brundige (p. 155) gives the following notes on Dundas and Zayas Islands. "I put into a small harbor at the north end of North Dundas Island. It was stated that there was no anchorage here, but I found a small river which extended into the island five miles or more, where I remained all night, and the next morning put to sea. At the north end of Dundas Island there are seven small islands named **Gnarled Islands** and reported to have foul ground about them; but this was found incorrect, as sounding showed not less than forty-five fathoms close to them all around. To the west of North Dundas Island is a small one named Zayas, about three and a half miles long and two miles broad; there is a good channel between Dundas and this island which steamers bound to Queen Charlotte Islands frequently take.

"I found a *sunken rock* about four miles northwesterly of Zayas Island having only six feet of water over it at low water; it is about twenty feet across and appears to be round; got ten fathoms water at about fifteen fathoms from it and obtained from ten to seventeen fathoms, and then dropped into deep water with no bottom at one hundred and sixty fathoms. As near as I can judge the reef is not more than one acre. The soundings were obtained on the northwest side, but on the northeast side I ran the nose of the canoe close to the breakers and could find no bottom at one hundred and sixty fathoms. It is evidently straight up and down. The tide here sets southwest and northwest not more than one knot per hour.

East ***Devil Rock.*** McCullough Rock

* The edition corrected to December, 1874, agrees more nearly with Vancouver.

PLATE No. 1570



"With a good bell-buoy anchored close to this rock ships could sail in safety. I obtained several good observations and found it to be in latitude 54° 40′ 45″ N. and longitude 131° 08′ 15″ W., with the following bearings: Cape Chacon bore SW. by W. ¾ W.; Gnarled Island E. by N. ½ N.; Zayas Island S SE. ½ E., all magnetic. I have no doubt of this being the Devil's Ridge. I was told by several Haida chiefs, who had been crossing here all their lives and their fathers before them, that there is no other rock or reef in this locality, and they directed me to go where I found the above rock."

From Zayas Island the general direction is about NE. by E. ¼ E. twenty miles to Point Maskelyne, named by Vancouver in 1793. This point appears to be but moderately high and wooded, and is formed by an island of small extent. From it SW. by S. ¾ S. four miles lie the Pointers, and SW. by S. ½ S. seven and a half miles lies Connis Rock, in Chatham Sound. Immediately off the point "lie two rocky islets, and to the south of it a small island (probably Parkin Island) close to the shore."* **Point Maskelyne.**

The geographical position of the point, placed by Vancouver in latitude 54° 42½′ N., is, according to British Admiralty Chart No. 1923 A,

Latitude	54° 38′.7 N.
Longitude	130° 27′ W.

From hence **Point Wales**, named by Vancouver, lies W. by N. ¾ N. three and a half miles. Westward from it, less than a mile, lies a small island. The name is differently applied on different English charts. The land of which Point Wales forms a projection is also an island, and has been termed Wales Island. South and west from its southern shore, in which is an indentation which looks as if it might afford anchorage, and extending a couple of miles off-shore, are a number of small islets called by Pender in 1868 the **Boston Islands**. SW. ¾ S. from Point Wales ten or twelve miles lies **Whitty Point**, the northeastern extreme of North Dundas Island. In the north shore westward from Whitty Point is an unexplored indentation, said to afford shelter for vessels, off which lie the Gnarled Islands elsewhere mentioned. Another smaller group, westward from the last, near the northwest shore of North Dundas Island, are named the **White Islands** by Pender on the last edition of British Admiralty Chart 2431.

PORTLAND CANAL.

Point Wales forms the western headland of Portland Canal or Channel, whose opposite headland is formed by Point Maskelyne. It was named by Vancouver, who says: "The distance from its entrance to its source is about seventy miles, which, in honor of the noble family of Bentinck, I named **Portland's Canal**." The entrance of this extensive inlet is not more than two and a half miles across, (according to Pender more than three,) from whence it trends N. 7° E. twenty miles, where it is separated by **Point Ramsden** into two principal branches,—that to the eastward having been named by Vancouver **Observatory Inlet**. From this point the canal trends N. 51° W. seven miles, then N. 2° E. thirteen miles, N. 48° W. thirteen miles, N. 35° W. ten miles, and finally N. 1° W. nine miles, terminating, according to Vancouver,† in **Portland Inlet.**

Latitude	55° 45′ N.
Longitude	129° 54′ W.

The total length on the above courses, taken from the chart of Vancouver, aggregates seventy-two miles. Pender's chart would extend this to eighty-one miles,—the differences all northward of Point Ramsden. To the southward of Point Ramsden its width averages three miles; to the northward of that point it is but little over a mile, with more than forty fathoms water throughout its entire length.

The broader portion on modern charts is often denominated **Portland Inlet**, the name of Portland Canal being then restricted to that part of it of contracted width which lies to the westward of Observatory Inlet.

The mid-channel line of this great arm of the sea forms the southeastern boundary between the British and American possessions, or British Columbia and Alaska Territory.

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*Vancouver, vol. ii, page 327. On the original edition of British Admiralty Chart No. 1923 A the name Point Maskelyne was erroneously transferred to another point over two miles farther to the north and east, but is omitted on the new edition and restored on No. 2431, (corrected to 1882,) but misspelled **Maskeylene**, while Connis Rock is misspelled **Conts Rock**.

†According to Pender's survey of 1868, in latitude 55° 56′ N. and longitude 130° 5′ W.,—a discrepancy too great to be adopted in ignorance of the means by which the later results were obtained.

Directly to the eastward of Point Maskelyne the Wark Channel,* a nearly straight arm, stretches thirty miles to the southeastward, its head reaching within a mile of Port Essington, and forming, by the portion between this arm and Chatham Sound, the Chim-sy-an Peninsula, previously referred to.

Wark Channel.

Within a distance of fifteen miles from Point Maskelyne, on the eastern shore of the canal, are three islands of considerable size, which have, respectively, received the names of **Compton, Truro and Somerville** islands. The largest and most northerly of these is the last mentioned. It is separated from the mainland by a channel about a mile wide, named **Steamer Passage,** into which debouches an arm extending to the south and east for a distance of some twelve miles.† Somerville Island is eight or nine miles long and two or three wide. To the westward of its southern part Vancouver found anchorage in thirty-five fathoms, muddy bottom. On the shores of Truro and Somerville islands, adjacent to this anchorage, Vancouver lays down *some rocks.* The form, relative size and position of these islands are so differently represented on different charts as to render a specific description inadvisable until additional material is received.

Somerville Island.

Steamer Passage is reported to have from twenty-eight to forty or more fathoms water throughout its extent. To the northward, from the northern end of Somerville Island, a branch, called **Nasoka Gulf,**‡ extends to the northward for five miles nearly parallel with the trend of the main inlet, from which it is separated by the Mylor Peninsula, one or two miles wide.

On the other side of Portland Inlet the apparent shore is also formed by islands. Northward from Wales Island lies a long island separated from the main shore by a branch trending in a nearly north direction, and continuous with the upper main branch of the inlet, or Portland Canal. This island, whose actual dimensions are not determined, extends about fourteen miles to the northward from a point within a few miles of Wales Island, and reaches to the west of, and somewhat more northerly than, **Point Ramsden.** The latter divides that portion of the inlet called Portland Canal from the branch named by Vancouver Observatory Inlet. This point seems to be tolerably bluff and high, wooded, and forming the termination of one of those small ranges characteristic of the topography of this region. To the **S SE.** from the point a short distance are some *dangerous rocks,* visible only at low water, and immediately outside of them one hundred and twenty-six fathoms are reported.

Observatory Inlet.

To the eastward from Point Ramsden, across the entrance of Observatory Inlet, about three miles, lies the entrance to Naas Bay, a small inlet with one branch to the southward and receiving from the northeast the **Naas River.**§

Naas Bay.

The bay extends inland nearly east from the entrance with a width of about a mile and a half for three miles, when it forms two arms,—one extending **S SW.** three miles under the name of **Iceberg Bay,** the other, at first trending **N NE.** and afterward to the northward and eastward, is entirely occupied by the bed of the Naas River and numerous tidal flats. Its length to the head of boat navigation is about fifteen miles.

The northern headland of the entrance of Naas Bay is known as **North Point,** low but bold-to, from which the land rises gradually to mountains to the **NE.** which attain a height of thirty-three hundred feet. From the point the shore trends in an easterly direction a mile and three-quarters to

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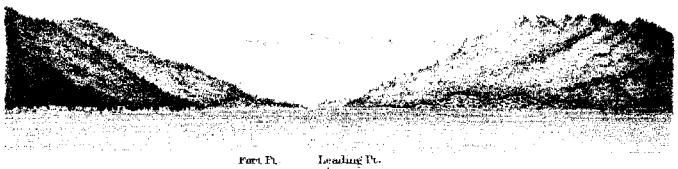
* Called **Work Channel** or **Inlet** by error on some charts. Brundige remarks (p. 157) as follows in regard to Wark Channel: "I again returned to Port Simpson, where I was told that there was a rock a few miles up in the center of Wark Channel. I proceeded out and found it just visible at low tide. This is described as a wonderful rock, very small at top, and 130 fathoms water close to it. The lead went down thump, thump, until 130 fathoms were run out, but no bottom found. I paddled all around it with the line out. This rock is situated abreast of Mount McNeil and the point that leads into the bay opposite Port Simpson. I ran a line across Wark Channel to Port Simpson Harbor, at the lowest part of the peninsula, course **S. 50° W.**, 4,500 feet distant from water to water, summit about 60 feet. I cannot see any difficulty in bringing a railway line down the south side of Wark Channel and then across to Port Simpson at the above place. Wark Channel is quite narrow at the entrance and only 32 fathoms deep. Entering about a mile the water deepens to 160, and above that all the way up there is no anchorage in any part of it except the little bay opposite Port Simpson where I ran a line across."

† This arm is called **Khutzeymateen Inlet** on British Admiralty Chart No. 2431, corrected to June, 1882.

‡ So it stands on the fly-leaf attached to the original edition of British Admiralty Chart No. 2431. On the late edition (corrections to June, 1882) it is spelled **Nasoga Gulf,** and this form appears upon U. S. Hydrographic Chart No. 225. The form **Nasoka,** taken from Tebenkoff (Chart IX), however, is prior and is probably correct, since numerous recognizable mistakes in spelling appear on the fly-leaf attached to the last edition of British Admiralty Chart No. 2431, such as **Yongas** for **Tongass, Conis** for **Connis, Maskeylene** for **Maskelyne,** etc.

§ The name has been written **Naas, Nasse,** &c., but it is probable that the double "a" more nearly represents the broad sound of the original word. Naas Bay, by some singular oversight, is represented on British Admiralty Chart Nos. 2430 and 2431 under the name of **Salmon Cove,** though the cove so named by Vancouver was placed by him much nearer the head of **Observatory** Inlet. This error is corrected on the last edition of 2431.

This bay was visited by the ship *Elisa* of Boston, Captain Rowan, in 1799. It was called **Cockatlane,** from the name of the chief of the Naas tribe at that time. The inlet was called **Chebbashaw** by the natives. Both names are recorded in the unpublished journal of the voyage. Captain Wild of the **Atahualpa** who first called attention to this river (*Mass. Hist. Soc. Coll.*, 1804), and Captain Magee, a pioneer trader, were both murdered by the natives of this vicinity, the latter in 1801 and the former in 1805.



Fort Pt. Leading Pt.
N E by E ½ E

Anchorage, Naas Bay
(From British Adm. Chart No. 2190)



Salmon Cove, Observatory Inlet, B.C.
(From Vancouver)

the opening of a narrow valley containing a small stream, on the low land near the mouth of which is situated an English missionary station known as the **Kincolith Mission**. About two miles **E. ½ S.** from North Point, on the shore of this low land, is situated the astronomical station of the English observers. For about a mile from North Point the shore is bold-to, and then the edges of the shoals, banks and bar of the river trend **SE. ½ E.** toward **Double Islet Point** on the opposite shore.

From **Low Point**, the southern headland of the entrance,—from the north side of which *a bank* extends a cable to the northward,—the shore trends nearly **E.** a little over two miles to Double Islet Point, bold-to all the way. The land rises rapidly from this shore to the height of two thousand feet. In the middle of the bay forty-five fathoms, sandy bottom, are reported. The anchorage is laid down in about ten fathoms, with the mission bearing **N.** by **E.** three-quarters of a mile. About **N.** by **E.** from Double Islet Point, somewhat over a mile and a half, is a rounded high point named **Fort Point.**

SAILING DIRECTIONS

FOR NAAS BAY.

The leading course for the anchorage is to keep Fort Point open from the high land called Leading Point, south of the river, to the eastward, **NE.** by **E. ½ E.**, until the mission bears **N. by E.**, when anchorage is had less than two cables from the edge of the bank.

A better anchorage can be obtained in Iceberg Bay by following the southern shore and rounding Double Islet Point within two cables, when anchorage may be had **SE.** by **E. ½ E.** from the point three-quarters of a mile, with the Mud Islands bearing from **NE.** to **NE.** by **E. ½ E.** These two islands are over a hundred feet high and situated on the mud-flat northeast of the bay. The anchorage is in about ten fathoms, with deeper water to the southward and westward farther up the bay. The shores of the bay are mostly bold-to and rise rapidly from the water except at its head, where there is a flat, steep-to, with low land behind it. It is perfectly land-locked, and, except for the narrowness of the entrance, affords an excellent harbor.

This bay and vicinity is represented on British Admiralty Chart No. 2190, (to October, 1872,) from which it appears that the geographical position of the astronomical station near Kincolith Mission is

Latitude	**54° 59′ 26″ N.**
Longitude	**129° 57′ 36″ W.**

The variation of the compass in 1872 was **27° 25′ E.**

TIDES.

It was **H. W. F.** and **C.** in August at $1^h\ 05^m$, the streams running two or three knots—rising with a full moon seventeen feet and with a new moon twenty-three feet. The bay, especially near the bar, appears to be disturbed by ripples at certain stages of the tide, which would make it an uneasy anchorage.

The depth of water on the bar of the **Naas River** at low water appears to average about two fathoms. In the vicinity of Fort Point as much as five fathoms is reported. Above that in the river it is quite variable, but navigable for canoes and light-draught boats about sixteen miles, to the Naas villages, where a Hudson Bay Company's trading-post is situated. At these villages, called **Kit-lak-a-laks**, an enormous number of fish * are taken in the spring.

Observations on the river bank, near the middle village, **NE. ¾ N.**, a mile and three cable's from the trading-post, give as the geographical position

Latitude	**55° 03′ 54″ N.**
Longitude	**129° 31′ 54″ W.**

The river is over one hundred miles in length, but much broken by cañons and cascades. Its headwaters approach very closely to those of the Stikine River. A sketch of the lower portion, as far as the villages, accompanies the British Admiralty Chart No. 2190.

The northern headland of Naas Bay borders on the waters of Observatory Inlet, which extends hence to the northward, with no important curves or indentations and a general width of somewhat more than a mile, about sixteen miles, at which distance on the western shore a smallindentation exists, into which a stream falls. This is Salmon Cove of Vancouver, a locality chosen by him for a long and careful series of astronomical observations for

Salmon Cove.

* **The Ulikon or candle fish is the most important species, and the fishery is in operation in March and April. These fishes contain more fatty matter in proportion to their size than any other known fish, and the incredible multitudes in which they appear have been noted by many of the authors who have treated of this region. It is the *Thaleichthys pacificus* of Girard.**

the purpose of correcting previous work of the same kind. This afforded good anchorage in thirty-one to thirty-five fathoms, mud and gravel, with every other convenience which they required. From the anchorage the points of the cove bore **N NE.** and **S.** by **E.**; the nearest shore **W.** by **S.** a cable and a half distant, and the opposite shore of the inlet **E NE.**, distant one mile. The appearance of the country about the cove was moderately low, rather broken, and densely wooded. A fine run of fresh water, containing salmon in great abundance, flowed into the cove.

The geographical position according to Vancouver's text is

Latitude ..... **55° 15′ 34″ N.**
Longitude * ..... **129° 43′ 30″ W.,**

the latitude depending upon twelve meridian altitudes of the sun and one of a star, and the longitude being the mean of 346 sets of lunar distances, each set consisting of 6 observations, in all 2076 observations.

The variation of the compass (August, 1793) was determined as **25° 18′ E.**, and the dip **75° 54′.5.**

The average range of the tide was about sixteen feet, and it was high water at $1^h\ 8^m$ after the moon's passage over the meridian.

About a mile beyond the cove the width of the inlet becomes much increased, and for seven miles is more than double that of the portion just described. Two long and very narrow islands named **Brooke Island** and **Larcom Island** by Pender are found in this part of the inlet, with some rocks about them, and on the western shore are some small indentations where Vancouver observed *sunken rocks* in some localities. From this point the inlet divides into two branches each about a mile in width, and terminating in a small belt of low land, behind which the country resumes its broken character, while in the interior lofty and barren snow-clad mountains were observed.

The eastern branch, termed **Alice Arm** on some charts, trends, according to Vancouver, in a generally **NE.** by **N.** direction ten miles, (about fourteen by Pender's chart,) terminating in

Latitude ..... **55° 26′ N.**
Longitude ..... **129° 24′ W.,**

(or latitude **55° 29′** and longitude **129° 20′** on Pender's chart.)

The other arm, sometimes known as Hastings Arm, extends about **NW. ¾ N.** about ten miles, (sixteen according to Pender,) terminating, according to Vancouver, in

Latitude ..... **55° 32′ N.**
Longitude ..... **129° 44′ W.,**

(or latitude **55° 39′** and longitude **129° 48′**, by Pender's chart.)

When approaching Point Ramsden, Vancouver was in doubt as to which of the two arms was the main branch of the inlet; but after his exploration it became evident that the western prolongation of the inlet is entitled to that precedence, both on account of its greater freedom from obstructions and from its length. To this portion only is now generally applied the name of Portland Canal. Three miles **NW. by W.** from its entrance on the western shore is a low point, denominated Tree Point on some of the charts. Behind this point the canal communicates with another, having a **S SW.** and **N NE.** direction, with a width of a mile and a half. This channel separates Pearse and other islands from the mainland.

Portland Canal.

Vancouver says, in regard to the canal, "the shores of this inlet were nearly straight and in general little more than a mile asunder, composed mostly of high rocky cliffs, covered with pine trees to a considerable height, but the more interior country was a compact body of high, barren mountains covered with snow, (July, 1793.) As we pursued this branch salmon in great plenty were leaping in

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* Pender's survey locates Salmon Cove in longitude **129° 51′ 45″ W.**, but whether this is the result of astronomical determinations or dead reckoning, and if the former, of what character, we have no means of deciding.

From the results published in Vancouver, vol. ii, pages 375–6, the approximate value of this longitude determination may be made out.

Combining together by weights the longitudes resulting from measures of the moon's distance from the sun, when the sun is *east* and *west* respectively from the moon, and computing the probable errors in the usual way, we obtain

⊙ E. of ☾ ..... Longitude **129° 54′.9** ± **0′.9**
⊙ W. of ☾ ..... Longitude **129° 34′.0** ± **2′.1**
Mean ..... Longitude **129° 44′.4** ± **2′.3**

The difference between these two results far exceeds the probable error of observation, and is therefore due to some constant, probably instrumental, error. If this is the case the resulting mean is free from the constant error, and we may, therefore, safely conclude that the longitude of Salmon Cove is **129° 44′ W.**, with an uncertainty of **3′** or **4′**.

all directions; seals and sea otters were also seen in great numbers, even where the water was nearly fresh, and which was the case upwards of twenty miles from its termination." This termination, according to Vancouver, is in "low, marshy land," the latitude being 55° 45′ N. and the longitude 129° 54′ W.*

The only obstructions in this extensive sheet of water are some rocks near shore about Tree Point; an islet, with rocks close to it, about three miles to the northwestward from Tree Point; an islet near the eastern shore, about nineteen miles from the entrance, and another about seventeen miles farther up the canal, both very small.

The channel behind Pearse Island, as examined by Vancouver, appears to contract gradually to the southward, reaching nearly to the N. extreme of Wales Island, and communicating there with a labyrinth of narrow channels obstructed by great numbers of rocks and islets, and extending north of Wales Island between Pearse Island and Cape Fox. It would be at present inadvisable to attempt any description of this knot of intricate passages, which offer, so far as is known, no inducements nor any facilities for navigation.

About six miles to the westward of Point Wales lies a group of small islands intersected by two small straits forming four passages—one leading eastward from the intersection into the labyrinth of channels connecting with Portland Inlet; one to the NW.; the most important to the westward toward Dixon Entrance, and the fourth and narrowest passage to the SE.

Among the first anchorages to be met with in the southeastern part of Alaska is that included between a peninsula of the mainland and the above-mentioned islands, and known as Tlekhonsiti Harbor.† This locality had a temporary importance owing to the establishment, in 1867, of the U. S. **Fort Tongass,**‡ which necessitated the visit there of several large transports with supplies for the garrison. A sketch of this locality, from merely approximate data, was published in 1869 by the U. S. Coast Survey.§ **Tlekhonsiti Harbor.**

The material at hand in regard to this locality shows several discrepancies, and hence it can be but approximately described. Fort Tongass was erected on the arm stretching to the northwestward from the intersection of the four passages above mentioned, and on the island forming its southern shore. The best channel for reaching the fort has been indicated as that passing through the NE. and NW. arms. The narrow southeastern arm has been termed Lincoln Channel; the broad southwestern arm, the harbor proper. The northeastern arm varies in width from three-eighths to three-quarters of a mile, and is about two and a quarter miles in length. There is *a rock* close to the northern headland of each entrance. No soundings in it are recorded.

Lincoln Channel is very narrow and further obstructed by islands. It is about three miles long and three cables wide. At the southeastern entrance anchorage is indicated off a small beach, in twenty-four fathoms, gravel. Hence the soundings are twenty, twenty-four and eighteen fathoms to an islet a mile and a half from the entrance. A passage with four fathoms water exists to the southward of this islet, and two small ones near it, beyond which anchorage is indicated in twenty fathoms, mud. Six cables to the westward from the islet only a fathom and a quarter is recorded, beyond which it deepens to six, sixteen and twenty fathoms. **Lincoln Channel.**

The harbor arm is a mile and a half long and about three-quarters of a mile wide, but obstructed by *reefs*. Both shores of the arm are indented by bights off which are *reefs*, leaving about half a mile wide of mid-channel ground clear of obstructions. *A reef* also extends to the northwestward from the western extreme of the southern shore of the arm. The passage between this ledge and the reefs to the northward and westward is somewhat less than half a mile. An unsigned MS. sketch of this locality in the Coast Survey archives makes the anchorage even more contracted. The depth of water here varies from five to nine fathoms. **Tongass Harbor.**

The northwestern arm varies in width from a third to two-thirds of a mile, and is about two miles long. The fort is situated about midway between the two entrances; and in mid-channel, abreast of the fort, according to Russian authorities, there is anchorage in thirty-five fathoms. But according to the above-cited anonymous sketch the mid-channel depth throughout varies from twenty to twenty-five fathoms, with ten to sixteen along the southwestern shore within two cables of the beach. The shores are indicated as bold-to. To the northwestward from the western entrance of this arm is a ledge five feet above high-water mark; two-thirds of the way from this ledge to the island on which Fort Tongass is situated lies *a kelp patch* with rocks in it. The course lies midway between the kelp and

*Pender's chart, before referred to, places this termination in latitude 55° 56′ N. and longitude 130° 5′ W.; but, until it is known in what manner this result was obtained, judgment on the great discrepancy may reasonably be suspended.

†This has been rendered **Tlechopcity** on the English and some American charts, and **Tayakhonsiti** by a typographical error in one of the Coast Survey publications. These errors probably arose in part from mistaking the Russian H (equivalent to English N) for the Russian II, (English P.)

‡Official spelling here adopted; sometimes called **Tongas.**

§On this sketch an error occurred in the designation of the scale, by which it was indicated as only one-half its actual scale.

the ledge. The harbor is evidently better suited for small vessels or steamers, and further surveys will be required before it can be considered available for large vessels.* The land is rather low and wooded, and on the shores of the harbor arm are several large Indian villages.

According to the Coast Survey sketch, a bare rock lies three or four miles **S. 48° W.** from the entrance of the harbor, with a low, narrow wooded group of ten or twelve islands, a mile and a half long, less than a mile to the eastward of the rock. These are indicated on Pender's chart as the **Lord Islands**, and are variously reported to be 150 to 250 feet high.

From the entrance to the harbor, according to the Coast Survey sketch, **S. 61° W.** about nine or ten miles,† lies Cape Fox, named by Vancouver; a broad point, not less than five miles in extent east and west at its southern part, bordered by rocks and rocky islets, moderately low and wooded, and backed by high wooded ridges, one of which 1,800 feet high, is named Harry Saddle. The latitude of this cape, according to Vancouver, is **54° 45′½ N.**, (according to Pender **46′½**,) while other authorities place it in about latitude **54° 42′**, a difference which forms one of a series of discrepancies previously mentioned.

Cape Fox.

"About half a league to the westward" of Cape Fox Vancouver's boats found refuge "in a very commodious, well-sheltered little cove," which protected them from a heavy southeaster. This locality was named Boat-harbor Point by Pender in 1868.

Three miles to the westward from the western angle of the cape *a sunken rock* is indicated by Tebienkoff and on the English Admiralty Charts. It is named **Pinnacle Rock** on the U. S. Hydrographic Chart No. 225. According to Lieut. Com. H. E. Nichols, the existence of this rock is positively denied by local navigators.

Between Cape Fox and the island on which Fort Tongass is situated is an entrance to an inlet which is known as **Nakat Inlet**, off the mouth of which is a group of small islands. This inlet was entered by Vancouver, who describes it in the following words:‡

"We passed a large deserted village on the north side of a small cove, which may also be considered as the southeast point of entrance into a narrow arm, (Nakat Inlet,) taking nearly a north direction; half a league to the northward of this point the eastern shore formed three small bays or coves with four or five islets before them. On the point which divides the two southernmost of these coves I observed the latitude to be **54° 49′** and the longitude **229° 29′**, from whence the inlet took a direction about **N. 8° W.**; the shores became nearly straight and compact, and were in general about half a mile asunder. The surrounding land being of moderate height and of that uneven surface generally exhibited by the insular countries lying on the sea-coast, afforded reasonable grounds to believe the western shore to be an island; in which case we should have been enabled to trace the continental boundaries a considerable distance to the north. About six in the evening our hopes vanished by our arriving at the head of the arm, where it terminated in a small fresh-water brook, flowing from low marshy ground, in latitude **54° 56′**, longitude **229° 28′**. Before it were several rocks and some rocky islets.

"On the low land forming the upper extremity of this arm, we saw some animals like wolves, but the shallowness of the water prevented our approaching near enough to fire at them with any probability of success. From hence we returned by the western shore, passing three or four rocky islets, and rested for the night about a league **N NW.** of our station at noon."

On leaving the inlet he "passed to the south of us a cluster of rocks and islands extending nearly in a **SW.** and **NE.** direction about half a league."

From Fort Tongass the entrance is about three miles in a northerly direction. In the farther bight inside the group of islands is a well-sheltered harbor with anchorage in less than fifteen fathoms, which has been visited by the U. S. S. *Hassler*, but no survey of the locality has yet been received.

From the northern side of Dixon Entrance to the westward of Cape Fox several important arms of the sea extend in the following order, going westward: 1. Between Cape Fox and Cape Northumberland, the **Revillagigedo Channel** leads to Behm Canal and Tongass Narrows. 2. Between Cape Northumberland and Cape Chacon, **Clarence Strait** leads to Ernest Sound and Sumner Strait. 3. Between Cape Chacon and Cape Muzon, **Cordova Bay** includes a congeries of islands and passages; one of the latter (Tlevak Strait) leads to Port Bucareli. The exact position of most of these capes and the limits of Cordova Bay are much in need of careful determination.

Separated from Cape Fox by the entrance of the Revillagigedo Channel is **Cape Northumberland**, named by Vancouver in 1793, and separating the channel from Clarence Strait. It is the southern extremity of the group of Gravina Islands; is low near the water, but rapidly rises to ridges a thousand or fifteen hundred feet high and wooded from the sea-level to their summits.

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*Meade reports anchorage in fifteen fathoms, rocky bottom, off Fort Tongass. He considers the anchorage dangerous in "any sort of a blow," and states that the facilities for obtaining wood and water are poor. He says: "Fort Tongass is on an island surrounded by very ugly reefs. The channel being extremely narrow and tortuous, it is accessible only to steamers. The water is everywhere very deep."—*Hydrographic Notice, No.* 13, 1869, *p.* 4.

†Three miles according to Pender's sketch, British Admiralty Chart No. 2431, corrected to June, 1892.

‡Vancouver, ii, pp. 345–346 August. 1793.

The south end of the ridge forms a very noticeable landmark, which is without doubt **Mount St. Lazaro,** named by Douglas in June, 1789, and placed west of Buccleugh Sound of Meares. It stands out alone from most directions and gives the impression of being over three thousand feet in height. It is broad topped, with its western side much higher than the eastern. At its base on the west side are two small humps, and its eastern face breaks off by steps to the water. It shows up dark, high, and separated from any adjacent land. The nearest mountain to it is Mount Tongass, on Annette Island of the Gravina group, westward from Mary Island. It is about forty-five hundred feet in height according to Nichols, and has on its eastern face a large crater-like hollow.

In coming out of Revillagigedo Channel a low wooded islet is seen lying off Cape Northumberland. As nearly as the discrepant authorities can be reconciled, it would appear that the cape is about thirteen miles to the westward from Cape Fox and twenty-four miles to the northeastward from Cape Chacon.

Vancouver's observations in this locality were taken from a small island south of the cape, where his observed latitude was **54° 51′½ N.**

"From this island, which is tolerably high, I gained a very distinct view of the surrounding rocks and breakers in all directions. The outermost of these towards the northwest lies **N. 57° W.** (true) three miles and a half distant, those towards the southwest **S. 67° W.** (true) four miles and a half; the southernmost, which were the farthest off, **S.** (true) six miles and a half, and the southeasternmost **S. 50° E.** (true) five miles distant. The intermediate spaces were occupied by an immense number of rocks and breakers."* From his position on this island Cape Fox bore **E.** by **S.** (true) fifteen miles, and Cape Chacon **W SW.** (true) eight or nine leagues.

Dangers.

DANGERS.

It will be observed from the above remarks of Vancouver that the vicinity of this cape abounds with dangers. On page 380, vol. II, he refers to the outermost of these rocks as follows: "The southernmost of the rocks lying off Cape Northumberland * * * * is a round lump of barren rock, very small, always above water, and which has some breakers lying at a little distance off its southeast side, * * * * the southeasternmost of these rocks lies from the south rock **N. 43° E.** (true) four miles and a half, and is a low, flat, double rock, always above water, but has much broken ground in its neighborhood.

"In the afternoon we passed the southwesternmost of the above rocks. These latter are two small rocks above water, with much broken ground to the north and northeast of them, and in a direct line towards the southeasternmost rocks; they bear by compass from the south rock **N. 44° W.** five miles and a half distant. Between these and the eastern shore lie many dangerous rocks and breakers; but as we passed the south rock I did not observe any danger to the north of it, between it and the other rocks, where the channel to all appearance seemed to be as free from impediments as that which we were pursuing towards the western shore."

This south rock has been named by the U. S. Coast Survey **Barren Rock.** It lies about fifteen miles west from Cape Fox. Tebienkoff (Chart No. IX) places it five miles to the southward from Cape Northumberland, with a clear passage on either side. Vancouver puts it in latitude **54° 45′ N.,** seven miles to the southward from the cape and a mile and a half to the southward of Tebienkoff's position. A deserted village on a detached rock near the cape is mentioned by Vancouver, and the appearance of a village was noted by Douglas.

To the southward and westward, broad-off the southern entrance of Clarence Strait, lie several dangers. The *Devil Rock*, or ridge, is placed **S SW.** seven miles from Barren Rock on British Admiralty Chart No. 2431, but the position is marked doubtful. Another is placed **SW. ½ S.** thirteen miles from Barren Rock. On the Russian Hydrographic Chart No. 1493 *Devil Rock* is placed nearly in the latter position, twelve miles **SW.** from Barren Rock, with no other patch indicated. Tebienkoff (Chart IX) indicates a rock or islet above water with rocks about it fifteen miles **SW.** by **S. ½ S.** from Barren Rock, under the name of *Devil Bank.*

A rock, doubtless identical with Devil Rock, is recorded in the journal of the ship *Eliza*, Capt. Rowan, in 1799. It is placed thirty-two minutes of longitude east of Cape Chacon and two miles in latitude farther south than the cape, and is described as a dangerous sunken rock.

The observations of Brundige (see p. 56) indicate that the true position of Devil Rock is **NW.** by **N. ½ N.** from Zayas Island about four miles.

The commander of the H. B. company's steamer *Otter* places it in range with the middle of the northern shore of Zayas Island and ~~Mount St. Lazaro~~, **NW.** and **SE.**, three and a half to four miles from the island. He also states that it is marked by *a breaker* and is awash at low water. From it the northwestern end of Zayas Island bears **S.** and the northeastern end **SE.**

* Vancouver, vol. ii, p. 370.

Captain McCullough also indicates another *sunken rock*, which seems to be unknown hitherto and is marked by a breaker. From it the northwest end of Zayas Island bears **NE. ½ E.**, the southern end east, while the western shore of Zayas is distant about three miles in a **SE. ½ E.** direction. This rock does not appear on any chart.

McCullough Rock.

The other rock of doubtful position, which may be called *Brundige Rock*, was also approximately determined by Brundige. The following abstract of his remarks gives all the information accessible. The bearings of Cape Chacon being misprinted in his report are here (and also in the account of Devil Rock) corrected.

"The Indians also informed me that I would find one large reef between Capes Chacon and Northumberland. On showing them the chart on which this rock was marked, they replied, 'No rock there, but farther in.' So, having camped on Zayas Island, I put out to look for these rocks in the position marked on the chart, but was unable to find them. It being calm we lay-to all night in the canoe, and in the morning, 29th August, continued on towards Cape Chacon but saw nothing. We then steered for the place indicated by the Indians, it being cloudy but with the air clear. I soon saw something that looked like breakers. The wind was now blowing strong from **SW.**, and as I neared it saw the sea breaking heavily at a distance of about two miles. It being low water, I approached as near as possible and took the following bearings: Cape Chacon, **SW.** by **S.**; Barren Rock, off Cape Northumberland, **E.** by **N.** ½ **N.**; Wedge Island, on west side of Clarence Strait, **NW.** ½ **W.** ※

Brundige Rock.

The above bearings place this reef eight miles true north of where it is placed on British Admiralty Chart No. 2431, marked "position doubtful." The breakers appeared to cover a space of fully one mile in extent."*

Nearly **SW.** by **W.** from Barren Rock, according to Russian authorities about twenty-four miles, is situated Cape Chacon† or de Chacon, named by Caamano, and forming the southeastern point of Prince of Wales Island. It is completely wooded and backed by high wooded mountains. The outlines of the land are very differently given by different authorities, but most of them agree in placing it in about latitude **54° 42′ N.** and nearly or quite on the same parallel with Point Nuñez and Cape Muzon.

Cape Chacon.

According to Lieut. Com. H. E. Nichols, Cape Chacon from Clarence Strait appears to consist of three wooded cone-shaped hills, the outer one being a perfect cone. From these the land rises by a flat step about twice the height of the cones into a mountain, made conspicuous by standing out alone on the southern part of Prince of Wales Archipelago. Coming down from the northward the cape changes very much in appearance; the inner cone becomes flat and elongated and is finally merged into the land back of it, while the bluff mountain behind it comes out between the cone and the cape as a nipple-shaped peak. Viewing the cape from the eastward it shows two well-defined cones, with high land directly back of them, and to the right a nipple peak, and then a bluff mountain. Northward from these the land is lower, afterward rising again to high mountains. From the **S SE.** the two cones are merged into the high land behind them, and the cape is best recognized by the nipple peak and bluff mountain above mentioned. From the westward Cape Chacon has much the same appearance as from the eastward, the three cones coming out in their order from seaward, the third one soon becoming flat and elongated. But the bluff mountain and nipple peak change places, the mountain rising more directly from the cape, and the latter, now appearing higher, situated to the left and not so well defined as when seen from the eastward. Westward from Cape Chacon the land is high and broken.‡

Mount St. Lazaro bears **NE. ⅜ N.** from the cape. **S.** by **E.** to **SW.** by **S.**, two and a half miles or thereabouts from Cape Chacon, lies *a large patch of foul ground* several miles in extent. The western part of this reef is above water, and is in range with the cape on a bearing **NE.** by **N.** and **SW.** by **S.** On the rest of the reef the sea breaks heavily. The mariner should not approach this cape within five miles unless the weather is clear. Westward from Cape Chacon is **Nichols Bay**,§ still unexplored, its entrance five or six miles in width, in which are three small high islands. The opposite

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* Brundige, *l. c.*, p. 157.

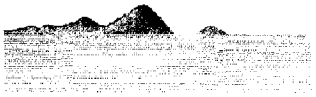
† Allowing for a tolerably constant error of six to ten miles in his latitudes, which appear, when compared with his bearings, to have almost invariably been calculated too far north, there are some reasons for thinking that this cape may have been the **Cape Murray** of Douglas. His **Cape Farmer** might have been one of the northern points of Dundas Island; Zayas Island and his **Petries Island** be identical, and Cape Muzon and Douglas' **Cape Irving** be the same. The differences of longitude tend to confirm this view, which would place Douglas' **Haines Cove** somewhere in Clarence Strait, regard **Port Meares** as situated in Cordova Bay, and consider his **Buccleugh Sound** as including all the waters between Capes Chacon, Northumberland and Fox, and the northern edge of the Dundas Islands. At all events, Capes Fox and Murray cannot be identical, as they are, by Douglas' reckoning, over a degree apart in longitude, and his Mount Saint Lazaro was considerably to the eastward of Cape Murray. From the present charts only approximate conclusions can be arrived at, but a single glance at the topography on the spot itself is sufficient to determine the mountain and establish a probability for the location suggested for the other names. However, Point Nuñez is constantly referred to in the journal of the voyage of the ship *Eliza*, Captain Rowan, in 1799, as **Cape Murray**, while Cape Chacon is called by its native name **Intankoon** and also **Bald Cape.**

‡ Nichols; report to Superintendent U. S. Coast and Geodetic Survey, December, 1882.

§ Named by the U. S. Coast Survey.

※ From this position the "Barren Rock" could not possibly be seen — Nor do I think that Wedge Id. could be seen from a canoe — I have no doubt but that the Brundige Rock is identical with the Hassler reef of 1883. The second bearing may have been taken on "West Rock."

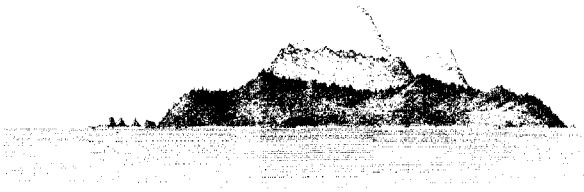
H. E. N.



Invisible Pt.

Invisible Pt. N 4° E. 13 Miles.

(From Tebenkoff)



North Island N ¾ E. 8 Miles.

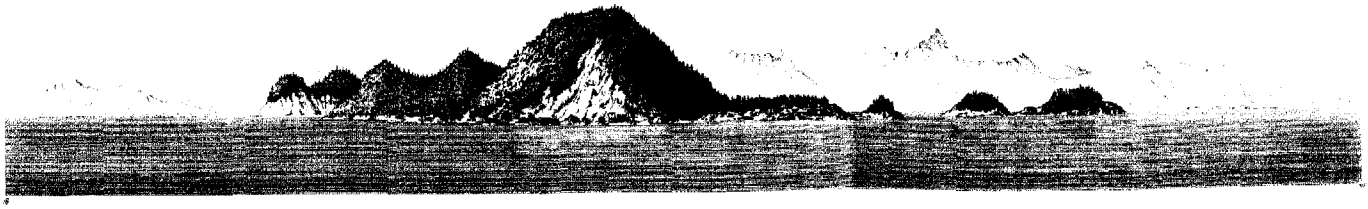
(From Dixon's Voyage.)



Baigalunee Strait.

Cape Muxon W by N ½ N, 1½ Miles.

(From a Sketch by Geo. Davidson, Assist. U.S.C. & G.S. 1867.)



Forrester Island from the South and West.

(From a Sketch by E.F. Herendeen.)

headland of this bay, bearing about **SW.** by **W.** ½ **W.** about seven miles from Cape Chacon and represented by different authorities as on nearly the same parallel of latitude, is **Point Nuñez**, the Punta de Nuñez of Vancouver's chart, a name adopted from Caamano.*

To the westward from the point, within a range of several miles, but differently located by different authorities, is an islet with *foul ground* around and between it and the shore.

The land upon which Point Nuñez is situated is **Bean Island**,† which is represented by Tebienkoff as a part of Prince of Wales Island. It is a high island with a bluff seaward face, higher than the small islands in Nichols Bay.

Point Nuñez forms the southeastern extreme of **Cordova Bay**, Puerto Cordova y Cordova of Caamano, a very extensive unexplored sheet of water containing numerous islands, some of large size, communicating with Port Bucareli by an arm called Tlevak Strait and extending, according to Tebienkoff, in a narrow inlet called Tliaká-ek Bay towards the headwaters of Moira and Cholmondeley sounds, from which it is separated by a short isthmus called the Kaigan Portage. Nothing more definite is known of the northern and northeastern portions of Cordova Bay. Westward from Point Nuñez, which forms the southern extremity of Bean Island, there are two large bights; westward still farther is a remarkable reddish-colored conical hill with a rounded top, a prominent landmark. Farther west the shores of Cordova Bay are lower and broken, not even approximately surveyed. **Cordova Bay.**

W. by **S.** ¾ **S.** about eleven miles from Point Nuñez *a rocky patch* is laid down in the mouth of the bay by Russian authorities, except Tebienkoff, who places it **W.** by **S.** nearly fourteen miles from Point Nuñez.

SW. by **W.** ½ **W.**, twenty miles from Point Nuñez, lies Cape Muzon, or Kai-gah-nee of some authors, the Cabo de Muzon of Caamano and Vancouver.‡ This is the most western of the southern capes of Alaska, bordering on Dixon Entrance.

This is a barren bluff point with deep water close to it.§ It is high and rocky, with *a reef* almost four cables long extending in a **SE.** direction; *another small reef* lies just to the northward of this. Also a rocky island close inshore, which does not show from the eastward but comes out very clearly in approaching from the northward or southward.‖ According to Brundige it is a long, sharp bluff, easily recognizable from sea, and with four small islands northeastward from the northeast prolongation of its shore. It appears to be formed by a high and somewhat precipitous bluff with a strip of lower land in front of it. Such a cape is figured by La Perouse as seen in profile to the eastward of Forrester Island. As seen by the U. S. Coast Survey party in 1867, bearing **W.** by **N.** ½ **N.** one mile and a quarter, (though the summit was hidden by fog,) the immediate shores were comparatively low and rocky, covered with a heavy growth of spruce, and the coast to the northwest appeared much broken and of a formation similar to that at the cape. Between the vessel and the cape strong current-markings were visible on the surface of the water, and La Perouse speaks of strong tidal currents experienced in crossing Dixon Entrance in this vicinity. Brundige experienced a one knot current in this vicinity and Nichols found weak tidal currents. **Cape Muzon.**

Cape Muzon is nearly in latitude **54° 42′ N.**, about the same parallel as points Nuñez and Wales and Cape Chacon. The longitude is given by Tebienkoff, from Khrushchoff's observations, as **132° 39′ W.**, but all other modern authorities place it from 2′ to 4′ farther west.¶

Nichols' reconnaissance of the Tlevak Strait included a determination at Howkan village, from which the position of Cape Muzon would appear to be, approximately,

Latitude	**54° 41′ 4″ N.**
Longitude	**132° 44′ 7″ W.**

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* This is the **Cape Murray** of some of the early fur traders, and perhaps of Douglas.

† Named by the Superintendent of the U. S. Coast and Geodetic Survey in 1880 for Dr. T. H. Bean, of the U. S. Fish Commission.

‡ The Cape Kaigani of Tebienkoff, variously spelled Kygane, Kaigani, Caiganee, &c., by different authors. From an examination of Galiano and Valdes' "Relacion" (p. cxxiv) and documents edited by Navarrete, it seems certain that the original designation of this cape was **Cabo de Muñoz** or **Muñoz Goosens**, which, by the transposition of two letters on Vancouver's copy from Caamano has been perpetuated as **Muzon**. However, as the erroneous orthography has been widely adopted and had priority of publication, it has seemed undesirable to make a change which would be of little if any service to the navigator, while attended with manifest inconvenience. It was called **Cape Pitt** by Dixon and some of the early traders, and **Cape Irving** by Douglas.

§ Brundige, *l. c.*

‖ Nichols, *l. c.*

¶ Brundige landed there, and from observations on shore places the cape in

Latitude	**54° 42′ 15″ N.**
Longitude	**132° 40′ 30″ W.,**

which is exactly the position given on British Admiralty Chart 2431.

From Cape Muzon, across Dixon Entrance, Point North, or Breakers Point of La Perouse, on North Island of the Queen Charlotte group, bears S. 8° or 10° W. (or, if Dawson's position be accepted, about S. by E.) twenty-eight miles. The cape forms the southern point of **Dall Island** * and the western point of entrance of Kai-gah-nee Strait.

The exact limits of Dall Island northward remain to be determined by the survey of the various openings westward from Kai-gah-nee and Tlevak straits. As far as known, it comprises most of the land westward from those straits, north of Cape Muzon, extending towards the Pacific and penetrated by Port Bazan.

From Cape Muzon the deeply indented eastern shore of Dall Island trends in a generally northwest direction, guarded by a multitude of wooded islets, reefs, and sunken rocks extending off-shore to three-quarters of a mile. The bight between this shore and South Point, being the entrance to Kai-gah-nee Strait, is the Port Meares or Meares Bay, of the early explorers and traders, (1791–1799,) but it is not possible to identify it with Port Meares of Douglas in 1786, from his chart and remarks.

Kai-gah-nee Harbors.

On the Dall Island shore are several indentations which were used as harbors by the fur traders of the last century, of whose presence the name American Bay, applied to one of these, is a reminder. The most marked of these coves are the Kai-gah-nee Harbors, surveyed by Etolin in 1833. These comprise three narrow bays, the middle one of which affords the usual anchorage. The southeastern point of the southern bay has an islet off it a quarter of a mile to the eastward, with some rocks outside the islet. These are bold-to to the northward, twenty-nine fathoms being reported close to them.

South Harbor.

The southern shore of the South Harbor trends W. by S., or nearly so, in an almost straight line for about two miles. There are several islets and rocks along this shore, and a good-sized mid-channel islet about half way from the point to the head of the bay, where the shore is bordered by a tidal flat. Within a quarter of a mile from the head of the bay *a small reef* puts out from the northern shore, which is elsewhere free from obstructions. The northern shore of the South Harbor† extends less to the eastward by three-quarters of a mile than the southern shore.

The bay is about three-eighths of a mile wide, and the soundings diminish pretty regularly from forty-seven fathoms near the entrance to thirty-seven north of the channel islet, and thirteen at the anchorage five-eighths of a mile from the northern headland of the entrance. The course in passes to the northward of the islet, and the anchorage is well protected from all winds except those from the eastward. There is said to be an Indian village near the head.

Middle Harbor.

The Middle and North harbors are separated by a small point and a nearly continuous, narrow, long island to the eastward. Off the eastern end of the island are some rocks, forming a patch of *foul ground*, having the same general trend as the island, W. ½ N. and E. ½ S., from which they extend a cable length. The Middle Harbor is less than a quarter of a mile wide and about a mile in length. Its shores are apparently clear of dangers; there are some islets in its northwestern angle. Near the southwestern angle is a very small basin, with about five fathoms water in it, in which a small vessel might lie as in a dock. This is called by the Russians **Prisoners Cove** or **Harbor.**

The depth of water in Middle Harbor varies from seven to nineteen fathoms. The anchorage is laid down by Etolin in seven and a half fathoms directly off the entrance of the basin.

North Harbor.

The North Harbor is of about the same length as Middle Harbor, but even narrower and with deeper water. It presents no special advantages. All are open to the eastward and surrounded by rather high wooded land. According to Etolin the geographical position of Prisoners Cove‡ is

Latitude	**54° 46′ 00″ N.**
Longitude	**132° 45′ 30″ W.**

The range of the tides, according to Tebienkoff, is sixteen feet. The variation of the compass, according to Etolin, was 26° E. in 1833.

In Tebienkoff's sketch, on Chart No. IX, (reproduced without change in the Coast Survey Atlas of Harbor Charts of Alaska,) the scale of miles by inadvertence has been made to read miles for quarters of miles. A better representation of this locality is Etolin's original sketch, which appears on Russian Hydrographic Chart No. 1396.

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* Named by the Superintendent of the U. S. Coast and Geodetic Survey in 1879.

† This harbor was known in 1799 as **Taddiskey**, a native name, or **Taddy's Cove**, a corruption of the former. At that time there were no resident Indians there, but there was a fortification to which they could retire when attacked. The land about this cove is extremely high and densely wooded.

‡ There are some who would identify this anchorage with **Port Meares** of Douglas; but the weight of evidence is against it. Douglas' sketch, besides having the title and compass reversed, with regard to the true points of the compass, is of such a character as to be quite incomprehensible, and the journal of the *Eliza* (1799) states that these coves were not known until after Meares' time.

North from Cape Muzon about three miles is South Point* the southern extreme of **Long Island.**† It is a thickly wooded rocky point, about six hundred feet high. A *reef* extends eastward from it half a mile another lies about the same distance off-shore to the southeastward. A small rocky spur with outlying rocks runs out about three cables **S SW.**‡

Long Island is about nine miles long and four miles wide, narrowing from the north, southward. Its western coast, bordering on the strait from half a mile off-shore, seems to be clear of dangers. Two miles south from South Cape, on the line joining it with Cape Muzon, Nichols found no bottom with thirty fathoms of line out. At this point **Kai-gah-nee Strait** opens **NW.** by **W.** This strait extends between Dall and Long islands about seven miles, gradually contracting in width from more than two miles at its south entrance to less than half a mile at the Howkan Narrows or Strait, which forms the northern termination of Kai-gah-nee Strait. Several small points project from the Long Island shore, and half a mile **NW.** from South Point is a *small reef*, close in. About two miles northward from South Point is a small village of the Haida or Kai-gah-nee race of Indians, who have given their name to the strait. Two and a half miles farther northward on the same shore two islands mark the entrance of **Bolles Inlet**, which appears like a passage leading in a northerly direction, and has not yet been explored. When these islands are abeam the strait takes a more westerly direction and the Haida village of **Howkan** is visible in a **NW.** by **W.** direction.

Kai-gah-nee Strait.

From Bolles Inlet entrance, **S.** by **W.** one and a half miles, is **Pond Bay**, a deep bight with a large wooded island in the entrance and several smaller islands within. **W.** by **N.** ½ **N.**, six miles from South Point on the Dall Island shore, lies the entrance of **American Bay**, named by Etolin.

It is indented about a mile and a half in a southwesterly direction with a width of about half a mile. Nearly in the middle of the strait, **NE.** from the northern point of entrance of American Bay, is a patch with nine to sixteen fathoms over it, on which anchorage may be had. In the entrance to the bay nine to twenty-one fathoms may be had. **SW.** by **S.** ½ **S.** from Dix Point, its northern point of entrance, is a cluster of four wooded islets united by banks at low water and called the **Bay Islets.** Behind these is **Anchorage Cove**, where good anchorage may be had in ten to twelve fathoms. Near the head of the bay are some rocks, but as a whole the shores of the bay appear unusually free from dangers or impediments to navigation. This bay is represented on U. S. Coast and Geodetic Survey Harbor Chart No. 713, from a reconnaissance by the *Hassler* in 1881. Immediately opposite the entrance to American Bay there is *a small sunken reef* extending about a cable westward from the Long Island shore with nine fathoms close to it. Seven-eighths of a mile west northwestward from this reef are the **Howkan Narrows**, where the clear channel contracts to a cable and a half and the strait to about four cables. A projection from the shore of Long Island at this point is the site of the Howkan village of Haida Indians and of a trading post and missionary station. To the latter has been applied the name of the Jackson Mission.§

Howkan Narrows.

Howkan contains about a dozen large Indian houses, and directly in front of the houses is *a large reef*, bare at half tide and surrounded in summer by kelp. The reef extends a cable and a half southwestward from the shore at high-water mark. **SW.** ½ **W.** from this reef, across the cable-and-a-half wide channel, is *a large kelp patch*, on which the *Hassler* party could not find less than fourteen feet of water. There is no safe passage west from this patch, between it and the shore. The kelp is said to disappear from all these reefs in winter to a greater or less extent.‖

In Howkan Narrows between the kelp patch and the village reef seventeen fathoms can be had through the channel.

Upon the peninsula on which the Howkan village is situated is the observation spot of the U. S. Coast Survey party of 1881. It is nearly south from the village, close to the high-water mark. According to observations by the reconnaissance party this spot is situated in

Latitude	**54° 49′.5 N.**
Longitude	**132° 50′.2 W.**

The variation of the compass in 1881 was **27° 03′.4** easterly and the dip **74° 21′.5.** The rise and fall of tides is about twelve feet.

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* The point was named **Ushnoi** or **South Point** by Tebienkoff, and **Point Kai-gah-nee** by Kupreanoff on Russian Hydrographic Chart No. 1493. The application of this name Kai-gah-nee to the cape, previously named by Caamano and Vancouver Cape Muzon, has laid the basis of future confusion, as South Point above mentioned is the Cape Kaigan of the British Admiralty Chart No. 2431.

† **Dolgoi Island** of the Russians.

‡ Information in regard to this vicinity and Tlevak and Howkan straits is derived from the reconnaissances of the Coast and Geodetic Survey steamer *Hassler*, Lieut. Com. H. E. Nichols, U. S. N., commanding, in 1881. This information is embodied in U. S. Coast and Geodetic Survey Chart No. 713.

§ After the Rev. Sheldon Jackson, DD., who has been indefatigable in his endeavors to establish missions in southeastern Alaska.

‖ In similar patches in the Aleutian region, watched all winter by the U. S. Coast and Geodetic Survey parties, there was no time when kelp was not conspicuous upon them, though most abundant and luxuriant in early summer.

About **SE.** by **S.** from the station, off the south bight of the peninsula, is Village Island, of small extent, about a cable from the shore. The northern bight has been named by the U. S. Coast Survey **Mission Cove**, (although the mission is not situated exactly upon it,) and affords anchorage for small craft close in-shore. A *sunken rock* with five feet of water on it exists in the head of the cove and may be avoided by keeping the islet on the south shore of the cove bearing nothing to westward of **SW.** by **S.** ½ **S.** From this cove the shore of Long Island trends in a northwesterly direction apparently bold-to.

W NW. from Howkan lies **Channel Island**, named by the U. S. Coast Survey, and appearing like two islands, but connected by a spit or bar hardly above high-water mark. The island is about four cables long and one wide, trending in an easterly and westerly direction with deep water on either side. The main channel, however, is that on the south and west from the island. From Howkan Narrows the shore of Dall Island extends in a west-northwesterly direction a mile and a half to **Entrance Point**, the eastern point of entrance to **Saw Mill Cove** from which **NW.** half a mile lies **West Mill Rock**, of small extent, close to the shore. East half south from this rock half a mile lies *Pond Rock*, awash at low water, nearly midway between Channel Island and West Mill Rock and a little to the northward of a line joining the two.

The entrance to Sawmill Cove is narrow and easily overlooked, though it has four or five fathoms least water in it. Entrance Point, which shelters the outer basin of the cove, extends in a **W NW.** direction and is quite narrow. The basin southwest from it is a little more than a cable in extent and has four to six fathoms in the middle. Westward from it is an opening obstructed by some small islets, leaving a passage a few yards wide with seventeen feet of water, which leads into an extensive unsurveyed basin with a large island in the middle of it and branches in several directions. This is said to freeze over in winter. In this vicinity a saw-mill has been erected by the missionaries to supply material for building purposes.

Sawmill Cove.

The channel extends northward between Pond and West Mill Rocks, where the narrows end, and the passage expands to a wide bay, some six miles long in a **NW.** and **SE.** direction, forming one of the ramifications of Cordova Bay, with which it connects by eastward-leading passages north of Long Island. The Dall Island shore is high, densely wooded, and much broken. It should be approached with caution as several sunken rocks exist along shore. The eastern boundary of this sheet of water, so far as it can be said to have one, is formed by a variety of islands.

From West Mill Rock **W.** by **N.** ½ **N.** a mile and three-quarters lies **Dead Pine Island**, of small extent, rocky, with a fir tree and dead pine stump twenty feet high without branches, situated close to the shore. A *reef* makes off towards the channel from this island a distance of two cables. **NW.** by **W.** from Dead Pine Island about three miles, **Bushy Island**, still small, is situated near a rounded point of the Dall Island shore. Westward around this point at a distance of about a mile is the entrance of **Rose Inlet**, with several islets in it and not yet surveyed.

North a mile and two-thirds from Bushy Island is **Square Island**, so named by the U. S. Coast Survey from its appearance when viewed from the southward and eastward. Eastward and southward from Square Island is a chain of islands and islets extending nearly to the northwest shore of Long Island. This is divided into two groups, the northwestern containing, besides Square Island, five small and two large islands; the latter separated by a very narrow passage.

The larger western one, named **Grand Island** by the U. S. Coast Survey, is over a mile in length; the other, **Aston Island**, is about two-thirds of a mile long. The eastern group contains one large island, named **Shoe Island** by the U. S. Coast Survey on account of the form of its profile, and eight or nine smaller islets and rocks. Northward from these lies **Jackson Island**, over a mile wide and four miles long in an east and west direction, which is not yet fully surveyed. North of this is a broad arm extending to Cordova Bay.

About two and a half miles **NW.** by **W.** from Bushy Island and quite prominent is **High Point**, from which **NW.** by **N.** ½ **N.** two and two-thirds miles lies **Reef Point**, the eastern end of **Young Island.** The latter is about two miles and a half long **W.** by **N.** and **E.** by **S.**, and about a mile wide, separated by a narrow passage from the western shore of the strait.

Between Reef and High points is a wide entrance with a number of small islands and rocks in it which have received the name of **Reef Islands.** The entrance, which might be mistaken for the main strait, has been called **False Lead** by the U. S. Coast Survey. It is unsurveyed but is of considerable extent, with several arms which lead to the westward. Reef Point should be avoided, as *dangerous rocks*, extend **SE.** by **E.** ¾ **E.** from it a little more than half a mile. The outer rock is *sunken at all tides.*

Opposite Reef Point the main shore is distant more than three miles in a northwesterly direction, where it forms a rather broad rounded point which has been named **Point Kellogg.** Between Reef and Kellogg points Tlevak Strait opens in a generally **NW.** by **W.** direction with a width of three or four miles and a length to the narrows of some thirteen miles.

Tlevak Strait.

Eastward from Point Kellogg is **Dunbar Inlet**, narrow and unsurveyed. From the point **NW.** by **W.** nearly seven miles the eastern shore of the strait extends, much broken, to a prominent bare spot caused by a landslide, beyond which is an indentation in the shore. Between Point Kellogg and

the landslide, extending off the shore a mile to a mile and a half, are three groups of islands. The first, or **McFarland Group**, consists of three good-sized islands, the smallest of which is a quarter of a mile long; the second, or **Corlies Group**, consists of two islands, each over half a mile long; the last, or **Nichols Group**, consists of three large islands, narrow and close to one another, forming a chain nearly two miles long in a **NW.** and **SE.** direction. Off these to westward a short distance are five small ones of very uniform size, called by the U. S. Coast Survey the **Sentinels**. The West Sentinel is **NW.** ¼ **W.** from Square Island ten miles and a half, and is about half a mile westward from the rest of the Nichols Group.*

Kelp extends nearly to mid-channel from the Nichols Group and should be avoided with care.

The western shore of Tlevak Strait between Reef Point and the narrows is high, wooded, and much indented by bays and bights. The largest of these is **Breezy Bay**, named by the U. S. Coast Survey on account of the strong winds encountered there; the land to the westward by its peculiar conformation concentrating the winds, which in the strait, out of this influence, are more moderate. **Eolus Point**, the southeastern point of entrance of Breezy Bay, is five miles **NW.** by **W.** ¼ **W.** from Reef Point. The western headland is **Boreas Point**, about two miles **NW.** from Eolus Point, with a small islet close to it. **Breezy Bay.**

The shores of Breezy Bay are quite irregular there are some rocks and one islet of moderate size in the bay, which has not been surveyed and should be entered with caution. The *Hassler* anchored in it in 1881, but no details of the locality have been received.

A mile and a quarter **NW.** from Boreas Point is another point of land with some rocks extending a short distance northeastward from it. This forms the southern head of a bight of which **Hassler Point**, three miles farther northwest, is the northwestern limit. There is a narrow island close in-shore east from Hassler Point and a rock about a cable and a half **SE.** from it. The bight is divided into two small bays by **Cayman Point**, which resembles an alligator's head, and though neither has been surveyed **North Bay** presents the appearance of being a good waiting place for vessels bound through the narrows, if only the depth of water proves suitable. At Hassler Point the straits begin to contract; a group of several small and two large islands with some rocks, called the **Lively Islands**,† extending a mile and a half in an east and west direction obliquely across the strait, still further diminish the width of the clear channel, which **NE.** from Hassler Point is about six cables in width, while the opposite shore is only about a mile and a half away. From this vicinity the strait contracts in a distance of two miles to the extremely narrow passage known as Tlevak Narrows,‡ after which it again expands and joins by several arms different branches of Port Bucareli. **North and South Bays.** **Tlevak Narrows.**

In the center of the narrows is **Block Island**, a small rocky island, wooded on top, and connected by *a kelp covered reef* with the shore to the eastward. The point forming the western limit of the narrows has received the name of **Turn Point**. It has a small bight **S.** from it with kelp and rocks in it. Half a mile north from Block Island, on the eastern shore, is **Boulder Point**, a low point covered with white boulders. From its extreme a line of islets with passages between them trend to the westward for a mile across the strait. The westernmost of these, close to the west shore of the strait, is called Bush Island. There are rocks, generally with kelp on them, at the west edge of Block Island and on the north extreme of Turn Point. The *Hassler* got no bottom with seven fathoms going through between Block Island and Turn Point. The tide-rips and whirls are very strong in the narrows, and it is not advisable to attempt a passage during the strength of the tide, which runs with great velocity.

SAILING DIRECTIONS

FOR PASSING THE TLEVAK NARROWS.

The west end of Boulder Point in range with the shore-line immediately south of Turn Point bight astern until Bush Island opens clear of the shore south of it, carries through clear of all dangers.

Beyond the narrows Tlevak Strait trends to the eastward and then to the northward, widens, and eventually breaks into several arms, but the survey has extended no farther, though the passage through has been repeatedly made.

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*McFarland, Young, Dunbar, Kellogg, Corlies, Gould, and Chapman are pioneer missionaries engaged in work at Alaskan stations. Lieut. Com. H. E. Nichols, U. S. N., Asst. U. S. Coast and Geodetic Survey, commanded the U. S. steamer *Hassler* of the Coast Survey during the work of 1881 and 1882, in Alaska. T. Dix Bolles, F. W. Coffin, W. D. Ross, C. F. Pond, Ralph Aston, and Dr. R. H. McCarty, all of the U. S. Navy, were members of the *Hassler* party in 1881 engaged on the survey.

†After the *Hassler's* steam launch.

‡The names **Kaigahnee**, **Howkan**, and **Tlevak** are corruptions of Indian names or words used for geographical features in this vicinity. The name **Tlevak Strait** appears to be due to Tebienkoff, and may have its origin in the same root as the name of Klahwak settlement and **Tlevakhan Gulf** farther north. It is spelled Tlevack on British Admiralty Chart 2431. The original orthography and application of these Indian terms is always veiled in more or less obscurity and does not seem worth much trouble to discover.

SAILING DIRECTIONS

FOR KAIGAHNEE AND TLEVAK STRAITS FROM CAPE MUZON TO THE NARROWS.

Avoid kelp. Be on guard for tidal currents and eddies. Keep in mid-channel until past Howkan, take the western passage, and then keep the Village Island, Howkan Point, open south from Channel Island until West Mill Rock bears east, having the western shore well aboard to avoid *Pond Rock*. From a point half a mile **NE.** from Dead Pine Island (until Square Island bears **E NE.** about half a mile) a course **NW. ½ W.** carries clear of all obstructions. Thence **NW.** by **N.** until Square Island bears **SE.** astern, when a **NW. ⅝ W.** course made good leads clear of all obstructions to Tlevak Narrows.

DANGERS.

In going north, when West Mill Rock bears east or to the southward of east the navigator is past *Pond Rock*. In coming south, when Village Island at Howkan opens clear of the **SW.** edge of Channel Islands danger from *Pond Rock* is past. A *reef* two cables long extends into the channel from Dead Pine Island.

There are rocks inshore northward from High Point two or three cables in extent. There are rocks in the entrance to False Lead among the Reef Islands which are probably covered at high water. The *sunken rock* **SE.** by **E. ¾ E.** from Reef Point lies three-quarters of a mile west from the above course and should be carefully avoided. It is bare of kelp in winter.

Tlevak Narrows should be entered west from Block Island, midway between the island and Turn Point until two cables past Turn Point, when Bush Island will open from the shore south of it, thus clearing the *reef* with kelp which extends northward from Turn Point.

Great caution should be exercised on account of strong tidal eddies and currents not well understood prevailing near the shores, which also have not yet been thoroughly searched for concealed dangers.

REVILLAGIGEDO AND ASSOCIATED ISLANDS.

In the Alexander Archipelago the plan pursued will be to take up the groups of islands and their adjacent waters group by group, working to seaward from the mainland and from south northward. In accordance with this plan the first in order will be the shores and channels northward from Cape Fox and including the Revillagigedo Group.

From Cape Fox the shore trends to the westward without distinguishing marks, and fringed by points and islets, until, at a distance of about three miles from Cape Fox, a point is reached where the shore takes a turn in a more northerly direction. From this point *a reef* extends southward two or three cables, only a few rocks showing above water. Northwestward about a mile farther **Boat Harbor Point** has been located by British authorities,* where Vancouver's boats put in, August 3, 1793, "in a very commodious well-sheltered little cove, which protected us during the night from an excessively heavy rain and a very hard gale of wind from the southeast which brought from the ocean so heavy a sea upon these shores as to invade even our snug retreat."†

This point is reported to be marked by a conspicuous leaning tree somewhat outside the general line of trees, and with thick foliage from bottom to top. Doubtful

Thence the shore extends—heavily wooded, with occasional bluffs, rocky ledges covered with driftwood, and strips of white beach—northwestward about five miles to **Foggy Point** of Vancouver or Point Brumez of some authorities. This point is situated, according to Vancouver, in

Latitude ..... **54° 54′.5 N.**
Longitude ..... **130° 49′.0 W.**

It is reported to be distinguishable from the southeastward by its rounded bluff-like appearance while just eastward from it are two white beaches separated by a darker rocky ledge. At high water the point is separated from the main shore and forms a rounded island, which is the eastern point of entrance of Revillagigedo Channel.

Nearly opposite Foggy Point, westward some seven or eight miles, is **Duke Point**, forming the western point of entrance to the channel, marked by **Duke Hill**, five or six hundred feet high and a conspicuous landmark from the southeastward. This part of the shore will be described further on.

Northward from Foggy Point is an indentation named **Foggy Bay** by the U. S. Coast Survey. It penetrates the shore about three-quarters of a mile and is about three miles long and without anchorage, no bottom being found by the Hassler party, in 1882, with twenty fathoms of line twenty yards

*British Admiralty Chart No. 2431, June, 1882.
†Vancouver, vol. ii, p. 346.

from the shore. For a distance of two miles above Foggy Point the bay is clear of obstructions, but the remaining third is an archipelago of islets and rocks. The largest of these is **De Long Island**, three miles **NW.** from Foggy Point. It extends westward somewhat beyond the other islands, and is well marked by a lone tree standing upright some distance from the edge of the woods and which can be easily seen from the southeast as soon as Boat Harbor Point is rounded. From De Long Island four other islands extend in a southeast direction, and between these and the shore are numerous other islands and rocks.

From De Long Island three-quarters of a mile **N NW.** is **Kirk Island**, parallel to and an eighth of a mile from the shore, where is an Indian village with a conspicuous double white house. *A reef* extends off from its **NW.** end half a mile in a **NW.** direction and about a third of a mile from the main shore, partly dry at high water. **W. ½ N.** from it a mile and three-quarters is **Black Rock**, bare, twenty-five feet high and forty feet in diameter. One hundred and fifty yards west from it are two small rocks which dry at low water, marked by kelp. Black Rock is also surrounded by kelp, and *a reef* covered with the same extends half a mile northward to **Snail Rock** and reef, so-called from its resemblance to a creeping snail, the rounded elevated part being marked with patches of green, while the low portion or head is bare rock and points in a **S SE.** direction. The portion of this rock dry at high water is one hundred yards long **N NW.** and **S SE.** and twenty-five yards wide. It is a good landmark, the highest part being forty feet above high water. Snail Rock is three and a half miles **NW. ½ W.** from De Long Island and a mile and a half from the nearest point of the mainland. Half way between it and the main shore at Cove Point is a *large kelp patch*. These are the only off-shore dangers between Boat Harbor Point and Point Alava.

Two miles in a north-northwesterly direction from the village opposite Kirk Island, on the main shore, is **Cove Point**, from which a group of islets extend **NW.** by **W.** three-quarters of a mile, beyond which, in the same direction, a mile farther, is the beginning of *White Reef*, which extends in the same trend at least a mile farther, unsurveyed, its middle part forming an island of which the highest part is two miles **N.** by **W. ¼ W.** from Snail Rock and about the same distance **NW.** by **W.** from the mainland at Cove Point. It lies broad off the entrance to Boca de Quadra, between which and White Reef are *rocks and shoals* yet unsurveyed. Eastward from the island off Cove Point is **Kah Shakes Harbor** or cove, so named from Kah Shakes, the chief of an Indian village situated at its northern point of entrance. This basin is three-quarters of a mile long, half as wide, of irregular shape, with a salmon stream falling into it, on which the natives have built a weir and dam. The depth of the harbor varies from four to thirteen fathoms with good holding-ground. But this neighborhood has not been fully examined; the entrance to the harbor, though straight and carrying three fathoms in at low water is only sixty feet wide, with *rocks* on either side. In our present state of knowledge it may therefore be considered unsafe to attempt an entrance.

A mile and a half northeastward from White Reef lies the entrance of the Boca de Quadra of Caamano and Vancouver, sometimes called **Quadra Channel** or **Bay**. This pointis situated, according to Vancouver, in latitude **55° 1′ N.**, and is a mile in width. This inlet has a width varying from one to two miles and is about thirty miles in length, describing a sigmoid curve and having several small openings making out from it. "The sides of this canal are nearly straight, firm and compact, composed of high, steep, rocky cliffs covered with wood."* It terminates in a small border of low land through which pass two rivulets, in latitude **55° 17′ N.** **Boca de Quadra.**

In and about the entrance are ~~great~~ numbers of rocks and islets, ~~rendering the approach difficult and dangerous.~~ *See Chart*

A salmon cannery was established in this inlet in 1883.

A mile and a half northwest from White Reef and about two miles from the entrance of the Boca de Quadra is an islet named by Vancouver **Slate Islet**, being entirely composed of that rock, which had nowhere else been observed in such quantity.

It is wooded and forms the largest and southeasternmost of a group of four islets and a large number of rocks, which extend to a mile and a quarter **SW.** from the main shore, northwestward from the entrance of Boca de Quadra. Thence the main shore extends in a generally **NW.** direction, with many small indentations and a few islets and rocks close in, about six miles to **Point Sykes**, named by Vancouver, and forming the southeastern headland of a large inlet. The opposite headland of the same, situated from Point Sykes **SW. ¼ W.** four miles, is Point Alava, named by Vancouver, and very conspicuous, with an islet lying close to it.

This point, as understood by Vancouver, included the whole of that projecting land which forms the northern point of entrance to Revillagigedo channel in this vicinity and the southwestern extreme of the entrance to Behm Canal. Some later navigators have restricted the scope of the name, applying it to one of the small prominences of this shore, which is described as not conspicuous but marked by a small wooded islet close in, rocky and steep-to, while two miles northeastward another small rocky prominence of the shore is regarded as the southwestern point of entrance to Behm Canal, which then would be about two miles wide and free from obstructions.

* Vancouver, vol. ii, p. 349.

Passing by the broken and irregular western shores opposite those just alluded to, to take them up again later in connection with the navigation of Revillagigedo Channel, the inlet opening between Points Alava and Sykes will be first described.

BEHM CANAL.

Behm Canal, named by Vancouver, is one of the most singular and extensive of the remarkable fiords characteristic of this coast. With the Revillagigedo Channel it encircles the large island to which Vancouver gave the name of Revillagigedo.* The direction of the canal from the entrance at Point Sykes is about **N. ¾ E.** ten miles to **Point Nelson**, named by Vancouver, and placed by him in latitude **55° 15′ N.** The canal, which at its entrance has a width of somewhat over two miles, increases to more than four miles, but abreast of this point is diminished to two and a half miles in width by an island upon the western shore. This stretch of the continental shore has a few small islets and rocks lying near it and is a little indented.

Immediately around Point Nelson **Smeaton Bay**† penetrates the coast, curving to the northeast and north, being about ten miles in length, and terminating in latitude **55° 18′.5 N.** It was found by Vancouver to be about three-quarters of a mile in width, with a bay or cove on its eastern shore which approaches within about two miles of the Boca de Quadra.

The surrounding country consists of steep, barren, rocky mountains, whose summits appear to be above the snow-line. Except at its head, where the land is low, these mountains rise abruptly from the water's edge, sparsely wooded with small trees. **W NW.** about two and a half miles from Point Nelson lies **Smeaton Island**, some three or four miles long, in the middle of the canal.

W SW. from Point Nelson lies **Rudyerd Island**,† somewhat smaller and narrower, and separated by a narrow passage from the shore of the Revillagigedo Island, which is considerably indented in its southern part and may with great probability hereafter prove to consist of several distinct bodies of land.

N. by E. from Point Nelson,‡ somewhat less than five miles, lies **Point Trollop**, named by Vancouver. The width of the canal is here about seven miles, inclusive of islands. Hence it contracts in width and becomes obstructed by islands and rocks in increasing ratio northward. The general direction of the shore of the mainland is **NW. by N.** Beginning at a point about two and a half miles northward from Point Trollop the continental coast is guarded for nearly seven miles by several long narrow islands.

The southernmost of these is very narrow and about two miles in length; it is called **Candle Island**,† and between it and the mainland is the southern end of **Shoalwater Passage**,† the remainder of whose southwestern shore is formed by **Winstanley Island**,† five miles long and over a mile in greatest width. Beyond its northern extreme are a large number of rocks and islets which have been called the **New Eddystone Islands.**§

Between Winstanley Island and the shore Shoalwater Channel is in some places only navigable for boats and canoes. About nine miles from Point Trollop this channel again enters the main body of the canal, which trends in a **NW. by N. ½ N.** direction with a width of two and a half or three miles, and becomes much embarrassed by rocks and islets.

At a distance of eleven and a half miles **NW.** from Point Trollop, and a little to the westward of mid-channel, lies the New Eddystone Rock,‖ named by Vancouver from its resemblance to the light-house off Plymouth. It rises from a sand-bar, covering a rocky ledge, to the height of two hundred and fifty feet; its circumference at the base is about fifty yards, and it regularly decreases toward the apex, which seems to be a few feet only in extent and nearly flat. It sustains a few small shrubs and trees in various crevices which extend quite up to the summit. To the northward *a ledge of rocks*, visible at low water and bold-to, extends some two hundred yards. The remainder of the bar at its base is composed of sand. This rock is separated by a mile from the western and by two miles from the eastern shore of the canal, and is placed by Vancouver in

New Eddystone Rock.

Latitude	**55° 29′ N.**
Longitude	**130° 45′ W.**

About three miles from the rock, **N. ½ W.**, is situated **Point New Eddystone** of the Russian charts, forming the southern headland of **Rudyerd Bay**, a T-shaped inlet, three-quarters of a mile

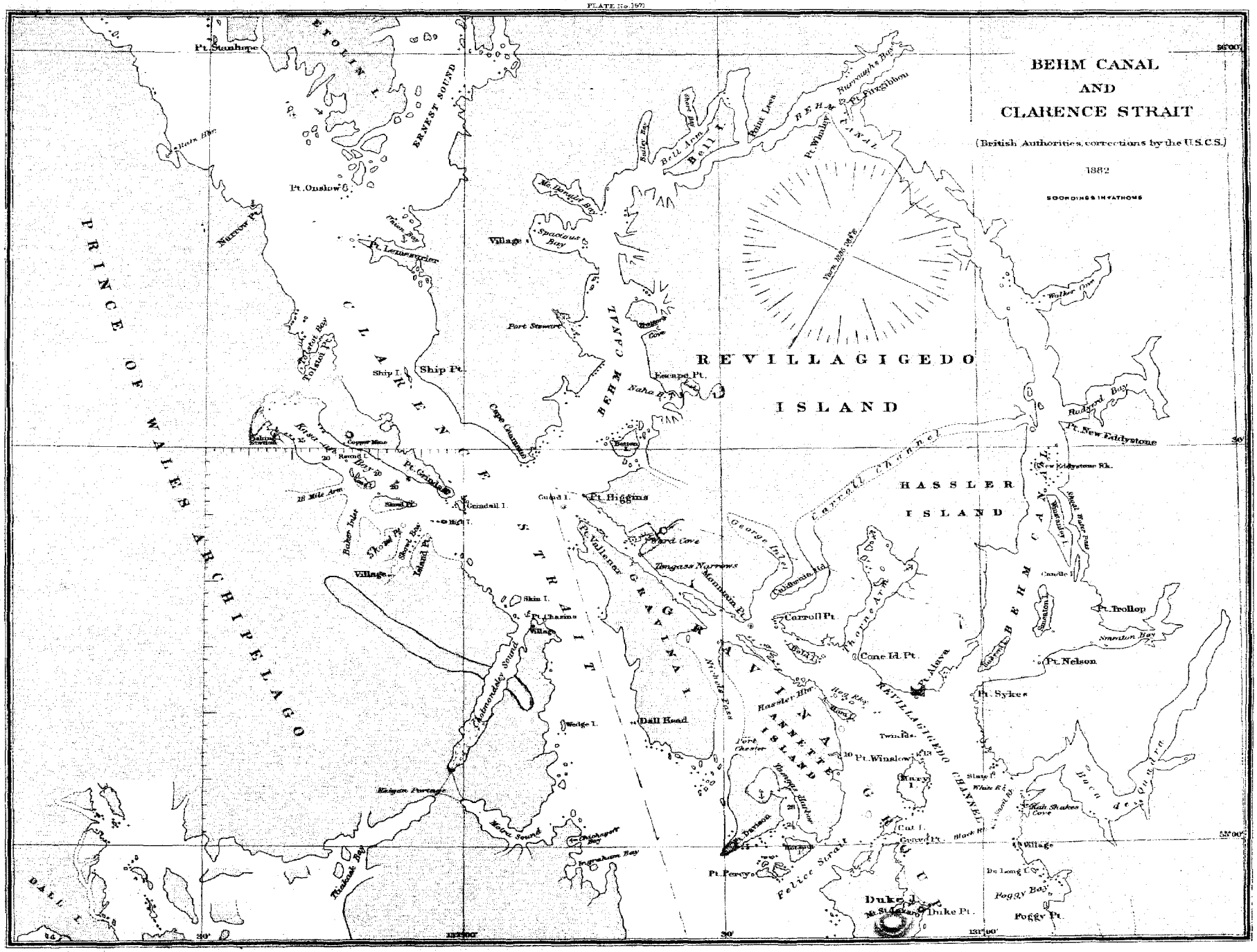
* In honor of the Conde de Revillagigedo, then viceroy of Mexico, to whose courtesy, as exhibited by the officers acting under his orders, Vancouver found himself much indebted.

† These geographical features were named by the Superintendent of the U. S. Coast Survey in 1879, mostly after engineers and others associated with the history of the Eddystone Light-house.

‡ It appears that Point Nelson of Vancouver's chart must be different from that of his text, as the bearings and distance do not agree. The point indicated in the chart is above referred to.

§ On the British Admiralty Chart 2431.

‖ On Tebienkoff's Chart No. IX, by some error the name is transferred to an islet much farther to the northward.


BEHM CANAL
AND
CLARENCE STRAIT
(British Authorities, corrections by the U.S.C.S.)
1882
SOUNDINGS IN FATHOMS
PRINCE OF WALES ARCHIPELAGO
CLARENCE STRAIT
BEHM CANAL
REVILLAGIGEDO ISLAND
HASSLER ISLAND
ANNETTE ISLAND
DALL I.
ERSTEIN I.
ERNEST SOUND
Pt. Stanhope
Pt. Onslow
Norway Pt.
Pt. Lemesurier
Village
Sparrows Bay
Port Stewart
Ship I.
Ship Pt.
Escape Pt.
Naha R.
Cape Chacon
Pt. Higgins
Grindall I.
Pt. Grindall
Village
Skin I.
Pt. Chasina
Village
Thumbs Sound
Wedge I.
Dall Head
Kasaan Portage
Moira Sound
Tuxekan Pass
Tuxekan Bay
Ingraham Bay
Pt. Percy
Felice Strait
Duke I.
Duke Pt.
St. Lazaro
Poggy Bay
Poggy Pt.
De Long C.
Village
Pt. New Eddystone
New Eddystone Rk.
Hudgard Bay
Walker Cove
Wharfinger I.
Pt. Trollop
Stanton Bay
Pt. Nelson
Pt. Sykes
Cone Id. Pt.
Pt. Alava
Carroll Pt.
Thorne Arm
Twin Ids.
Pt. Winslow
Harry I.
Slate R.
White R.
Rat Snakes Cove
Black R.
Gravina I.
Tongass Narrows
Ketchikan
Bell Arm
Bell I.
Behm Canal
Revillagigedo Channel
Nautical Miles

wide and about eight miles in extent, which penetrates to the north and east between high, barren, snowy mountains. Opposite this point an unexplored opening on the shore of Revillagigedo Island is indicated by Vancouver.

In this vicinity the Revillagigedo Island shore is broken by the northern entrance of the unsurveyed Carroll Arm. This is asserted to extend to the southward and westward to Revillagigedo Channel, cutting off **Hassler Island*** from the southeastern part of what was formerly supposed to constitute one body of land.

NW. ⅜ N. from Point New Eddystone, eight and a half miles, is the southern headland of **Walker Cove**, named by Vancouver, another of the small inlets so frequent on this coast, having a width of half a mile or more, a length of some six miles, and a general direction of **NE. by N.** Off its northern headland are some small rocky islets covered with low pine trees; around the shores large numbers of sea-otters were observed by Whidbey's party in 1793.

Hence **W NW.** some eighteen miles the canal preserves an average width of about two miles to **Point Fitzgibbon** of Vancouver, the shores on either hand being somewhat indented with small bays and coves. This point is long and narrow, peculiarly shaped, and has a small cove to the eastward from it. It would appear to be moderately high, at least in part, and is distant about one mile from **Point Whaley**, in latitude **55° 55′.5 N.**, which forms the northern extreme of Revillagigedo Island. From this point Behm Canal takes a **SW. by S.** direction, and is continued as Burroughs Bay† **N NE.** about six miles, with a width of about a mile. The shore is somewhat indented by small coves and the bay terminates in a mud flat, over which several rivulets discharge, and upon which Vancouver found a large amount of drift-wood. At the same time (August, 1793) he observed large numbers of salmon here, but they were mostly out of season at the time of his visit. The waters of the bay were discolored and almost perfectly fresh, rendering it probable that these streams flow from glaciers. The head of the bay was placed by Vancouver in latitude **56° 1′.5 N.**

Burroughs Bay.

Four miles from Point Whaley, **SW. ½ S.**, lies Point Lees, where the canal contracts to less than a mile in width. On this point Vancouver observed a large, but at that time untenanted, Indian village. The latitude was observed by him to be **55° 54′ N.** From this point the canal, or one portion of it, continues to the southwestward in the same direction as previously, but gives off an arm extending five miles in a **NW. by N.** direction from Point Lees. From this branch Bell Arm penetrates to the **S. by W.**, rejoining the more direct or principal channel of Behm Canal at a distance of seven miles. The shores of this branch, in some places not over a quarter of a mile apart, are steep, high, rocky and covered with coniferous trees. About midway, on the northern or continental shore of this branch, **Short Inlet** penetrates to the northward with a length of about three miles and a width of a mile. Three or four miles farther, **Bailey Bay** enters the same shore to a somewhat greater distance in the same general direction, immediately after Bell Arm rejoins the main canal. The land cut off between the arm and the canal forms Bell Island of Vancouver; it has the usual broken topography of this region, and extends about six miles in a **N. by E.** and **S. by W.** direction.

From the southern extreme of this island the canal takes a nearly south direction for seven miles, at the same time expanding to a width of nearly two miles. The shores on either hand are much broken and not fully surveyed. On the western or continental shore **McDonald Bay**, a large arm, extends to the westward four miles, with some rocks about its entrance. Several sunken rocks within it were reported by Vancouver's party. In a bay on the northern shore the remains of an Indian village existed, around which grew a quantity of wild apple trees, bearing fruit of agreeable flavor.

This inlet is separated by a peninsula from a large and spacious bay directly south of it, of which Vancouver reports that its entrance was nearly three miles wide **N NW.** and **S SE.** Its northern point is situated in latitude **55° 48′ N.**, whence the north side of the bay takes a nearly west direction about four miles and a half, forming in that space three or four coves, and rounding somewhat irregularly to its southern point of entrance; within which is an island about a mile in extent, with *no navigable channel* between it and the shore to the southward. The shores of the bay are very moderately elevated, thickly wooded, and terminating in a sandy beach nearly all round. Tebienkoff locates here an Indian settlement. The interior country was not very high, especially to the westward, where low woodlands extended nearly as far as the eye could reach. The opposite shore of Revillagigedo Island is much broken by small unexplored coves and bays.

Spacious Bay.

From the southern headland of the bay above mentioned the canal takes a **SE. ½ S.** direction for nearly nine miles, and thence to its termination eight and a half miles **S. ½ E.**, simultaneously expanding in width from a mile and a quarter to nearly six miles. About six miles **SE. ¾ E.** from the headland mentioned on the Revillagigedo shore is a small entrance named **Traitor's Cove** by Vancouver, from whence issued a party of Indians who attacked his boats and wounded two of his men. To the northward of this cove, on the same shore, about three miles, is a somewhat extensive but unsurveyed inlet.

Traitor's Cove.

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*This fact was reported in 1882, and the name of the U. S. Coast Survey vessel *Hassler* was applied by the Superintendent to this unnamed body of land.

†On Russian Hydrographic Chart No. 1493 this is called **Burrong Bay**, translated to mean a burrower or borer.

SE. by S. three miles from Traitor's Cove, on the same side of the canal, is situated Escape Point, where Vancouver had landed at the time of his difficulty with the natives. It is situated, according to Vancouver, in latitude 55° 37′ N. On the Russian Hydrographic Chart No. 1493 the name has been transferred to another point two miles to the southward, which has a small islet near it, and this error has been copied into the British Admiralty Chart No. 2431 and U. S. Hydrographic Chart No. 225.

Port Stewart.

On the continental shore, nearly abreast of Traitor's Cove, which bears ENE. about four miles, is Port Stewart of Vancouver, named for one of his officers who surveyed it. The entrance is about two miles wide, the headlands bearing N. 30° W. and S. 30° E. from each other. It has a general direction of N. 60° W. from the middle of the entrance, contracting in width for two and three-eighths miles to a stream coming in at its head.

This port consists of two basins, the outer one formed by three islets and adjacent sand-bars; the inner one by a point which makes out from the middle of the northern shore. This is nearly met by *shoals* extending from the opposite shore, which recede again to the westward of the point and form a rounded basin about a quarter of a mile in extent. This basin has a narrow prolongation to the northward, between the point above mentioned and an island about a cable to the westward of it. The northern point of the shoal is rocky; the entrance to the basin, only a cable wide, is obstructed by *a foul patch* directly in the middle of its narrowest part, which occupies fully one-half of its width, leaving a very narrow seven-fathom channel to the northward, and one with five fathoms between the patch and the northern point of the shoals. The northern shore is bold-to. Inside this basin six and eight fathoms may be had, but between it and the head of the bay the space is entirely occupied by shoals.

A group of three islets in the southern part of the entrance forms the protection of the outer port or anchorages. The two northern islets are joined by a rocky shoal, forming a barrier about half a mile long and quite narrow. From the southern islet *a long narrow shoal* makes out in a northwesterly direction, nearly joining a prong of the other shoal. In the narrow channel between the two shoals, however, fourteen to twenty fathoms may be carried. On this southern islet, which is of small extent, Vancouver's astronomical station was established. Between it and the adjacent southern shore exists a clear passage less than a cable in width, having nine to eleven fathoms in it. Between these islets and the southern shore a sub-triangular space exists, perfectly protected from all winds, and affording good anchorage in thirteen to seventeen fathoms. The area thus inclosed is three-eighths of a mile wide and three-quarters of a mile long NW. and SE.

In line with Observatory Islet, the western end of the northeastern islet, and a point on the northern shore, in a direction about SE. by S., a quarter of a mile from the latter, in another little islet, high and bold-to. To the westward of it are two others with rocky shores, low, but having apparently no outlying dangers.

DIRECTIONS FOR THE USE OF PORT STEWART.

The better course for the inner basin would appear from Vancouver's plan to lie between the high islet and the two others, but a reef obstructs the passage to the northward of the former. The course for the outer anchorage passes to the southward of the three northern islets, and the W. point of the W. islet of the southern group being bold-to may be rounded within a short distance, and good anchorage may be had with this point bearing N., half-way between it and the southern shore, in fifteen fathoms, sandy bottom.

Vancouver recommends, as the best and a perfectly safe passage into the port, the narrow channel between the Observatory Islet and the mainland. As unknown sunken rocks may exist in the other passages, caution should be exercised in the use of them. SE. by S. ½ S. a quarter of a mile from the northern headland, outside of all the islets, a patch of rocks is indicated by Vancouver with deep water about it. Vancouver places his astronomical station in

Latitude	55° 38′ 15″ N.
Longitude	131° 36′ 00″ W.,

but Tebienkoff gives the longitude as 131° 44′ W., and on an old Russian plan taken from Vancouver it is given as 131° 47′ W.

The variation of the compass was determined by Vancouver as 28° 30′ E. (1793.)

The communication with the shore is easy, and wood and water may be conveniently obtained in great abundance. The shores are of a moderate height and covered with berry bushes, shrubs and coniferous trees.

To the southward from Escape Point the canal expands, forming bays on either shore. On the western shore, four miles to the southward from Port Stewart, is an unsurveyed inlet about two miles long in a westerly direction, and over a mile wide at the entrance. It contains some islands. On the eastern shore, south of Escape Point, the coast curves to the eastward and southward, forming a large open bay, from which some small openings extend to the northward and eastward. There is a small

island near the northern headland and a number of others near the southern point of the bay. This bay is divided into two parts by a long projection from the mainland, extending in a westerly direction toward the small island above mentioned.

On the northern side of this point is an anchorage known as **Naha Bay**, which appears to be accessible from either side of the island, the approaches being reported free from all danger. The anchoring place is a cable and a half off shore, in fifteen to eighteen fathoms, good holding-ground. It is about twenty miles by ship's run from Ward Cove.

Into the northern and eastern angle of Naha Bay a creek empties from a lake over some rapids, and here on the northwestern shore a salmon fishery was established in the spring of 1883. The surface of the lake appears to be normally several feet below high-water mark, with an average tide of about sixteen feet. Strong currents run in and out with the tide. At the **SW.** end of the house a bluff rock abuts on the creek, which is here about fifty feet wide, the opposite shore being rocky and irregular. In this place the stream runs at a rate of three knots. For fifty yards below this spot there are three to five fathoms water, then a bar, dry at low tide, makes out from the northern shore, leaving a fifty foot wide channel along the southern shore with a depth of three feet at lowest tides. This channel is a cable and a half in length, crooked, and at its western extreme enters deep water. This locality was looked at by Lieutenant Commander H. E. Nichols, U. S. N., in 1883, and the above description is based on his memoranda.

South from the bight southeastward from Naha Bay the shore trends again to the westward and becomes infested by islands and rocks.

At this point the width of the canal is materially contracted by the approximation of the shores south of the bays above mentioned, and especially by **Betton Island** of Vancouver,* which is about a mile and a half wide and three miles long, situated somewhat over five miles **S.** by **E.** ½ **E.** from Escape Point. It is separated from Revillagigedo Island by a strait a mile wide, in which are several smaller islands. The northern and western shores of Betton Island are bordered with several dangerous rocks lying half a mile from shore, and this portion should not be approached within a mile by navigators. The island is about fifteen hundred feet high, nearly divided by a deep gash or chasm in an easterly and westerly direction, is densely wooded and with bluff shores.

Two miles southward and eastward from Betton Island is **Point Higgins**, named by Vancouver, the southeastern extreme of this entrance to Behm Canal, and which separates it from the western entrance to Revillagigedo Channel or Tongass Narrows. It is wooded and low for a long way back and will again be referred to. Vancouver placed it in latitude 55° 27′.5 **N.**

The opposite or southwestern headland, **W.** by **S.** ½ **S.** four miles and a half from Point Higgins, is **Cape Caamano**, a "remarkable projecting point," named by Vancouver, according to whom it is situated in†

Latitude	55° 29′ **N.**
Longitude	131° 43′ **W.**

This cape is wooded to the water's edge, surrounded by rocks, which also embarrass a small cove to the eastward of the cape. It separates the northern entrance of Behm Canal from Clarence Strait, and from it Point Higgins bears **E.** by **N.** ½ **N.** four miles and a half, Point Vallenar nearly **E.** by **S.**, and Point Grindall **SW.** ½ **S.**, each five miles distant.

REVILLAGIGEDO CHANNEL.

Duke Hill, on the northeast extreme of Duke Island, lies **S.** ⅝ **W.** from Snail Reef, and with Foggy Point opposite, about seven or eight miles eastward, forms the southeastern entrance to Revillagigedo Channel, named by Caamano and Vancouver, and formed by the Gravina Group on the south and west and the mainland and Revillagigedo Island on the north and east. This channel communicates with Behm Canal, Clarence Strait and Dixon Entrance by several passages, some of which are still unsurveyed. To the contracted portion between Gravina Island and the southern shore of the island of Revillagigedo the name **Tongass Narrows** has been applied by recent navigators.‡

*The name of the island is erroneously spelled **Beaton** on Vancouver's chart, an error which has been almost universally copied in subsequent charts. The correct spelling is given in several places in the text of his voyage. It was named for Robert Betton, who was wounded by the natives at the time they attacked Vancouver's party at Escape Point.

†But Tebienkoff places it 6′ farther west; the Russian Hydrographic Chart No. 1493, 11′ farther west; while upon British Admiralty Chart No. 2431 it is 8′ west of Vancouver's position.

‡Until very recently the charts were destitute of any details in this region. A sketch map, prepared by pilot **W. E. George**, of which manuscript copies were circulated, contained the results of his observations and the names applied to various points, islands, &c., by himself and other recent navigators. This information or part of it appears to have been used in the preparation of British Admiralty Chart No. 2431, edition of June, 1882, but in which some errors have crept as to names. The sketch of Capt. George, with some additions from observations by the Hassler party in 1881, was issued by the U. S. Coast Survey in 1882 as Harbor Chart No. 712, with a sketch of Ward Cove on the same sheet. In 1882 the *Hassler*, Lieut. Comd'r **H. E. Nichols, U. S. N.**, commanding, made a reconnaissance of Revillagigedo Channel from Foggy Point to Point Vallenar, giving information much more thorough than any previously accessible. On the charts and field notes submitted by the officers of this party the description herewith of Revillagigedo Channel and Tongass Narrows wholly depends.

Duke Hill, above referred to, marks **Duke Point**, the northeastern extreme of **Duke Island**, and is stated to be a conspicuous landmark from the **NE.**, **E.** and **S.** It is about six hundred feet high, thickly wooded, with a deep saddle in which are one or two tall trees.

In passing northward through the channel east from it the saddle opens when the hill begins to bear about **SW.** Duke Point is bold-to, with a dry rock not far from its northern shore. From it Grave Point, the northern extreme of Duke Island, bears nearly **NW.** about five and a half miles. The shore between them is indented by three nearly equal bights containing *kelp patches*, *reefs*, and visible as well as *sunken rocks*, which extend off-shore nearly to a mile in some cases; hence this shore should not be approached within a mile by vessels until better known.

The deepest indentation is also the southeasternmost, where, at nearly two miles from Duke Point, there is an extremely narrow passage, shoal at its inner end, leading to a land-locked basin more than a mile in length and affording six to twenty fathoms water, but on account of its shoal entrance only accessible by small craft, boats or canoes. **SE.** by **E.** half a mile from Grave Point is Duck Island, about a quarter of a mile in extent, with a low rocky point continued in the same direction, which is partly covered at high water, but has a high rocky nub at its extreme southeastern end.

On each side of this island are *rocks and reefs*, the outermost a dry rock nearly a mile **N NE.** from the Duke Island shore. Between Duck Island and Duke Island is an anchorage in ten to twenty fathoms, to which the entrance is from the northward between Duck Island and Grave Point. It is somewhat protected by a long reef which extends southward from an islet south of Duck Island. In the present state of our knowledge this anchorage, called **Reef Harbor** by the Hassler party, cannot be recommended unless the navigator has local knowledge.

E NE., two miles from Grave Point, lies *Little Reef*, and **NE.** ¼ **N.** from Grave Point lies *Whale Reef*, both stated to be covered at high water, each about three cables in extent **N NW.** and **S SE.**, and apparently without outlying dangers. These are the outermost dangers off the western shores of Revillagigedo Channel between Duke Point and the northern end of Mary Island. They lie broad off the passage between Duke and Mary islands. This passage is obstructed by numerous known reefs, rocks and islands, and doubtless by others unknown as yet. It is probable that there is deep water enough between the reefs for a ship passage in several places; six fathoms can be carried through by hugging the shore of Duke Island west from Grave Point at a distance of a cable and a half, and deeper water when half a mile from Grave Point.

The largest island between Mary and Duke islands is **Cat Island**, a mile and a half **N NE.** and **S SW.** and less than a mile wide.

A mile and a half **SW.** from Grave Point is the entrance to a basin two miles and a half long **S SW.** and half a mile wide, with ten or twenty fathoms inside and six on the line of a long *reef* which closes the northern half of the entrance. This basin is commodious enough when once entered, but owing to the obstructions eastward from the entrance it is at present of no particular consequence.

At the **S SW.** extreme of Cat Island, and connected with it at low water, is Village Island, of small extent, with several rocks about it. On this island are fifteen Indian houses, which during the summer were found empty, and twenty-one remarkably carved totem-posts. On the adjacent shore of Cat Island seven inhabited houses were observed in 1882. Southward from Village Island to the opposite shore the water is shoal, about three fathoms when the tide is out, with a dry rock twenty-five feet high in the middle of the passage.

Northeast from Cat Island are several islets surrounded with rocky platforms, of which **Lane Islet** is the most important. If there is any clear passage between Duke and Mary islands it probably lies just **NW.** from Lane Islet. Observations indicate that a passage exists here about four cables wide and carrying ten or twelve fathoms through, but until more is known it is not advisable to attempt it with a vessel. There are two unlocated *dangerous sunken reefs* in the passage.

Mary Island * extends in a **NW.** by **N.** and **SE.** by **S.** direction, with a length of four miles and a greatest breadth of two miles, somewhat irregular in outline, and with some rocks about its shores. Mary Island is flattish, rises almost directly from the beach to an altitude of one or two hundred feet with a rather even top; most of the trees are dead as if from forest fires, and the soil is of a boggy character. The northern extreme of Mary Island is Point Winslow, named by local navigators, moderately high and wooded. West from Mary and Duke islands Felice Passage, believed to be more or less obstructed, but unsurveyed, extends to Clarence Strait, which it joins south of Annette Island.

Immediately west from Point Winslow is an indentation of the northern shore known as **Mary Island Anchorage**, which lies between the former and **West Point**, the shore south of this line being irregularly indented. The principal bight runs in a **N NW.** and **S SE.** direction just west from Point Winslow, but the southern inner part of it is shoal. **S SW.** from Point Winslow two cables is a narrow tongue of land called Log Point. **W.** by **S.** from Point Winslow is *a reef* marked by kelp. Anchorage may be had in seven or eight fathoms, broken shell and sand, about equally distant from the reef, Log and Winslow points, the north tangent of the latter bearing **NE.** by **E.** ¼ **E.** and West Point about **W.** ½ **N.**

* Named by Capt. W. E. George, in 1880—the Saint Mary Island of British Admiralty Chart 2431, edition of June, 1889.

The rise and fall of the tide at this locality is sixteen to twenty-one feet. The variation of the compass in 1882 was 28° 16′ easterly. The position of the observation spot on the east shore of the bight, a quarter of a mile southward from Point Winslow, was

Latitude	54° 06′ 16″ **N.**
Longitude	131° 10′ 39″ **W.**

This anchorage is of small extent, but convenient for a vessel detained by a southeasterly gale or waiting for a suitable tide to work through Tongass Narrows. A sketch of it was obtained by the *Hassler* party in 1882.

From Point Winslow Point Alava bears **NW.** by **N.** five miles, and the northern shore of Annette island is about the same distance **SW.** from West Point of Mary Island Anchorage. The extreme depth of water in the first-mentioned passage exceeds one hundred fathoms, but between Mary and Annette islands it appears to be only about fifty fathoms, and rapidly diminishes southward in width and in depth and is not believed to be navigable with safety.

NW. ½ W. from Point Winslow about two miles are the Twin Islands,* of small extent, two in number, a cable and a half apart **W.** by **N.** and **E.** by **S.**—the eastern one rounded, about eighty feet high to top of trees, and less than a cable in diameter; the other larger, irregularly shaped, and about sixty feet high. There are some *sunken rocks* near them, but they may be safely approached to a distance of two cables and have from four to sixteen cables about them.

From Point Alava the shore extends in a westerly direction two miles and a half to a projecting point, **SE.** from which, a short distance, is a group of small rocks, some of which are dry. With this exception this stretch of shore and that beyond it two and a half miles farther are free from dangers, compact, and rise rapidly from the water to a considerable height. About six miles from Point Alava is the southeastern point of entrance of an extensive inlet marked by a small pyramidal island four hundred and seventy-five feet high, known as **Cone Island,** with several others much smaller between it and the shore. Here Thorne Arm,† not yet surveyed, extends northward about ten miles with a width of about a mile and a half at its entrance. Just within the entrance, on the western side, is a small bight with an island in it. Thorne Arm extends eight or ten miles northward, expanding towards its head into a spacious basin containing a number of islets and rocks and affording anchorage in several coves.

About **W.** by **N. ½ N.** three miles from Twin Islands is the easternmost group of a series of rocks, islets and reefs, called by local navigators the Hog Rocks,‡ which extend in a generally **W.** by **S.** direction some three or four miles to the northeastern shore of Annette Island. At low water this series resolves itself into several groups with passages between; at high water there are eight principal dry rocks and many sunken ones, besides two islands of small extent. **Walker** (sometimes called Lewis) **Island** is about midway in the line, wooded, rounded, about three cables in extent, with a small wooded islet south a short distance from it. Westward from Walker Island two-thirds of the way to the Annette Island shore, and much smaller than Walker, is **Side Island,** wooded, with rocks between it and the shore.

Most of the dry Hog Rocks are rounded and black, rising like the backs of a herd of swine but a few feet above the water, with many others submerged. Except in the gaps previously mentioned, the general course of the ridge is either awash or marked by kelp.

At about the point where the line of these rocks meets the shore of Annette Island a narrow boat passage half a mile long cuts off **Ham Island,** two and a half miles long, triangular, widest at its eastern end, where rocks extend, nearly a quarter of a mile eastward. South of Ham Island the boat passage communicates with **Cascade Inlet,** two miles long and one-third of a mile wide, with water too deep for convenient anchorage. Near the southern point of entrance to this inlet is a large cascade, stated to be an excellent place to obtain water in smooth weather. The northeastern extreme of Ham Island was named by the Hassler party **Middy Point**; *rocks* make off from the shore south from it. **S. ½ W.** from Middy Point and about **SE.** by **E. ½ E.** from the cascade is *a sunken rock or shoal* off the entrance to Cascade Inlet. There appears to be three or four fathoms quite close to it, and in summer it is probably marked by kelp.

From this vicinity the shore of Annette Island extends in a generally **S SE.** direction, tolerably compact, wooded, and rising inland to peaks twenty-five hundred to over three thousand feet in height. The easternmost and most remarkable of these is Tongass Mountain, about thirty-six hundred feet in height, bearing about **SW.** by **S.** from the Twin Islands.

Two miles and a half eastward from the entrance to Cascade Inlet a stream falls into the sea through a little basin. Northeast from this basin anchorage in eight or ten fathoms, gray mud, may be had three-quarters of a mile off shore; at half a mile off shore the bottom is rocky, and closer in becomes shoal.

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* Named by Captain George; erroneously called the **Sisters** on British Admiralty Chart 2431, edition of 1882.

† Named by the U. S. Coast Survey, in 1880, for Capt. Charles Thorne, long in command of the steamer *California* in these waters.

‡ By error **Frog Rocks** on British Admiralty Chart 2431, edition of 1882.

From Walker Island W. by N. ½ N. four and a quarter miles lies **Angle Point**, the southeastern extreme of **Bold Island**, two and a half miles long W. by N. and E. by S., and a mile wide at the widest eastern part, thence narrowing towards its western extreme. It is situated nearly in the middle of Revillagigedo Channel. It is high with two knolls on it, rising towards its eastern end to about three hundred and fifty feet, bluff and bold, but infested with rocks off its northeastern end. Here also are several islets, and at a distance of four cables NE. from the northeastern point of Bold Island is **Round Island**, of small extent. Between Round Island and the islets SW. from it is a passage carrying over twenty fathoms water. Seven cables W. by N. ¼ N. from the western end of Round Island is *a dangerous sunken rock* known as *Mastick Rock*,* about three cables from the shore NW. from it.

Two cables W NW. from its western end is **Trap Islet**, with some rocks close NE. from it.

The ship channel passes south from Bold Island, and there is no occasion in general for attempting the northern channel. If, however, it should be necessary to do so, going westward a course of nothing to northward of W. by N., or, going eastward, nothing to northward from E. by S., laid to pass in mid-channel between Round Island and the islet next SW. from it, will carry clear of the rock.

The passage north from Bold Island is about two and a half miles long, and westward from Mastick Rock about half a mile wide and twenty to thirty-five fathoms deep in mid-channel. Northward from it, Black Mountain, a ridge higher at each end, trending in a N NE. and S SW. direction, rises to nearly two thousand feet.

Coming from the eastward the southernmost visible part of Bold Island is formed by Angle Point. The passage southward from Bold Island is nearly a mile in average width, clear of obstructions, with fifty to eighty fathoms water.

The Annette Island shore is here indented by a bight about as long E. and W. as, and directly opposite to Bold Island.

Harbor Point, the easternmost extreme of this bight, lies one mile and a quarter SE. ½ S. from Angle Point. Immediately SW. from this point is situated the entrance to **Hassler Harbor**, surveyed and named by the party on the *Hassler* in 1882. This harbor is formed by **Pow Island**, rounded, about two and a half cables in extent, wooded, and situated with another small islet west from it and *some sunken rocks* on an extensive area of shoals, behind which and between which and the land southward is a four to ten fathom channel which constitutes the harbor.

Hassler Harbor.

W. by S. ¼ S. a cable and a half from the shore at Harbor Point is *Entrance Rock*, always covered, having about eight feet over it at low water. The shoal area of which this forms the northeastern culmination extends westward from this vicinity a distance about equal to the length of Pow Island, parallel with it and southward to the island, with *several rocks* which dry at low water on this area north from Pow Island. About a cable and a half S. ½ E. from Entrance Rock, two and a half cables SW. by S. from Harbor Point, and somewhat less than one cable E. ½ N. from the NE. end of Pow Island, is *Channel Rock*, which dries at low water, steep-to at north and west, but with shoal water extending from NE. to SE. from the rock eastward to the shore.

The channel, which has from three and a quarter to six fathoms in it, passes eastward three hundred yards from Entrance Rock and westward fifty yards from Channel Rock, where it makes a sharp turn from S SW. to SE. by S. This entrance therefore is difficult, and not advisable without local knowledge or a pilot, except for small craft.

From Pow Island the shoal area extends W NW. twice the length of the island with one break, but there is *an eleven-foot shoal* at nearly half a mile W NW. from Pow Island about a cable in extent to the three-fathom line. E SE. from this shoal is a passage three cables wide carrying five or six fathoms water, eastward from which about two hundred yards a small island rises above the surface about two cables NE. by N. ½ N. from **Beck Point**, a small prominence of the shore of Annette Island. One-third of the distance from the islet, towards Annette Island, is *obstructed by shoal water*, but the shore at Beck Point is bold-to. At the southern point of Pow Island *shoal water* extends two-fifths of the way from the island toward the main shore. The course in from the westward is in a direction E. ⅛ S. for mid-channel between Pow Island and the shore south of it until the eastern tangent of Pow Island bears N NW., when anchorage may be had in seven or eight fathoms, broken shells and gray sand.

The observation spot of 1882 at Hassler Harbor was determined to be approximately in

Latitude	**55° 13′ 01″ N.**
Longitude	**131° 26′ 39″ W.**

The mean rise and fall of tide experienced here was about fifteen feet, and the extreme range twenty-two and a half feet.

A survey of this not very convenient little anchorage was made in 1882, and will shortly be published by the U. S. Coast Survey.

About a mile westward from Beck Point, in summer a beautiful double cascade falls into the sea, which has brought down sediment enough to form a bank on which anchorage may be had, according

* A vessel named "*Mastick*" struck on this rock in July, 1882.

to Captain George, in nineteen fathoms or less, the shore between the cascades bearing **S SW.** two cables. Half a mile westward from the cascade is a small indentation with a stream coming in and forming a beach at its head. From an islet at its northeastern extreme, a narrow strip of shoal water extends about two cables. **W.** by **N.** ½ **N.** two and three-quarter miles from Harbor Point is **Reef Point,*** off which two islets and some rocks extend in an easterly direction a cable and a half. South from Reef Point is a double bight, or two parallel nearly equal bights, separated by a point nearly parallel with Reef Point, from which *a long narrow reef*, which mostly dries at low water, extends four cables to a dry rock. **N.** and **S.** from the reef the three-fathom line at low water is close to the rocks. Each of the bights has a beach at its head and extends in a nearly **E.** and **W.** direction.

A mile and a quarter **W.** by **N.** from Reef Point is **Spire Island,** a cable and a half in extent, just **NE.** from which is a small islet, while north and west from Spire Island *several reefs* extend to a quarter of a mile. The principal rocks on both these reefs dry out at or near low water and are fully covered at half tide. South of Spire Island there is a very narrow but navigable passage with twenty-seven fathoms in it. A mile and a half **NW.** ¾ **W.** from Spire Island and about half a mile **E.** from the **SE.** angle of Mountain Point are *Cutter Rocks* drying at half tide.

DIRECTIONS

FOR AVOIDING SPIRE ISLAND REEF AND CUTTER ROCKS.

Walker Island on or nearly on with Angle Point, between Mountain and Reef points, clears both reefs.

The shore of Hassler Island north of Bold Island and between the entrance to Thorne Arm and Spire Island forms an arc convex southward, irregularly indented, bold-to, with several small bights making in, several small islets close to, and occasional dwellings of the Tongass Indians near the shore.

NW. ¾ **W.** one mile from Trap Islet is **Circle Island,** round, steep-to and wooded, about two cables in extent and three cables from the shore. Nearly a mile **NW.** from it is **Carroll Point,** the southeastern point of entrance to **Carroll Channel,**† whose opposite point of entrance is the northeastern angle of **Mountain Point,** from which Carroll Point is distant about a mile and a half **NE.** and **SW.**

Mountain Point, which is the **SE.** extreme of Revillagigedo Island, is high, bluff and bold-to, with a rocky shelf at its base. The face of the point looking **E SE.** is nearly half a mile wide.

The depth of water in the entrance to Carroll Channel is over one hundred and thirty fathoms, black, muddy bottom in mid-channel. The water shoals southward, and midway between Mountain Point and Cutter Rocks the depths average about twenty fathoms over a rocky bottom. **SE.** from Carroll Point are three islets within half a mile, behind which is a small bight in the shore. Carroll Channel is still unsurveyed, but is reported to extend to the northward and eastward some twenty miles, connecting with Behm Canal near Rudyerd Bay and separating, from what was formerly regarded as one body of land under the name of Revillagigedo Island, a large body of land named by the U. S. Coast Survey **Hassler Island.** This island would appear to be over twenty miles in length **N.** and **S.** and over ten miles in width, and is penetrated from the southward by the previously described Thorne Arm.

NW. by **N.** a mile and a half from Carroll Point is **California Head,** a bluff, bald, narrow prominence separating Carroll Channel from **George Arm** or **Inlet,**‡ which extends about fifteen miles to the northwestward, is about a mile wide at the entrance, unsurveyed, and may be connected with the unexplored openings from Behm Canal near Betton Island, which appear to extend to the southward and eastward. Back of Mountain Point and apparently between George Inlet and Tongass Narrows is situated a prominent mountain peak rising over three thousand feet above the sea.

From the southeastern angle of Mountain Point **Race Point** bears about a mile **SW.** and forms the northwestern extreme of Annette Island, the northern point of entrance to Annette Bay, and the eastern point of entrance to **Nichols Pass,** which separates Annette from Gravina Island. Off Race Point *a reef* extends a cable and a half to the northwestward, the principal rocks of which are dry or uncover at low water. From Race Point a mile and a half **W.** by **S.** ¾ **S.** lies **Gravina Point,** the northeast extreme of Gravina Island and the northwestern point of entrance to Nichols Pass. It is a small rounded peninsula connected by a narrow neck with the island. In mid-channel between Race and Gravina points there is more than ninety fathoms water.

Nichols Pass has been surveyed but the data have not yet been received, though Lieutenant Commander Nichols reports it to be navigable; within the southern entrance is a commodious harbor named by Nichols **Port Chester.** From the north *a large reef*, called *Race Reef*, is seen southeast from Gravina Point in mid-channel, which from a distance appears to obstruct the whole channel. Beyond this reef there are islands. **Nichols Pass.**

* The name is misplaced westward on U. S. Coast Survey Harbor Chart No. 712.

† Named by the U. S. Coast Survey in 1880, in honor of Captain James Carroll, of the steamer *California*, to whom the Coast Survey parties were indebted for many courtesies in the prosecution of their work.

‡ Named by the U. S. Coast Survey in 1880, after Pilot W. E. George, to whom is due the first sketch chart of Revillagigedo Channel and Tongass Narrows.

S SW. one mile from Race Point is Anvil Head, a broad promontory, with a small island **SW.** from it, and which forms the southern point of entrance to **Annette Bay,** which extends, gradually diminishing in width, to the eastward about three miles, nearly reaching Cascade Inlet which is doubtless a continuation of the same trough. Annette Bay is entirely free from dangers, but has rather deep water except at a distance of two miles from its entrance, where small craft may find anchorage in ten or twelve fathoms. The shores are compact and wooded.

Annette Bay.

Between Gravina Point on the south and the Revillagigedo shore, west from Mountain Point, **N NE.** from Gravina Point nearly two miles distant, is the entrance to **Tongass Narrows,** a name given by local navigators to the western contracted part of Revillagigedo Channel.

Somewhat over one mile north from Gravina Point is the eastern end of **Pennock Island,** named by Captain George, and lying nearly in mid-channel of Tongass Narrows. This island is three miles long **W.** by **N.** and **E.** by **S.,** and about three-quarters of a mile in greatest width. It is low, the tops of the trees with which it is densely wooded not rising more than two hundred feet. The eastern end of Pennock Island has several dangers in its vicinity, which, however, mostly dry out at low water. These are: First, *a rock* covered at half tide, two hundred and fifty yards **SE.** by **S.** ¼ **S.** from the middle point of the eastern end of the island; second, *a rock* covered at half tide in the entrance of the southern channel, a quarter of a mile **W.** by **S.** ¼ **S.** from the **SE.** point of the eastern end of Pennock Island and an eighth of a mile from its southern shore; third, *California Rock,** **NW.** by **W.** ½ **W.** half a mile from the northern angle of the eastern end of Pennock Island, in the channel north of that island. This is a very dangerous rock, with nine feet of water over it at low water and almost exactly in mid-channel. The northern passage is not over a quarter of a mile wide from shore to shore in several places, and is obstructed by California Rock above mentioned, with about two cables passage way north or south from the rock. From the western extreme of Pennock Island **NE.** Fish Creek comes into the channel from the interior of Revillagigedo Island, falling into a small bight, on the shore of which stand three Indian houses. The sediment brought down by the creek has filled the bight and formed *a shoal* with a margin convex towards the channel, which extends nearly one-third of the way across the channel.

The southern passage is half a mile clear at its eastern entrance, and narrows westward until at a distance of two miles it is reduced for a small space to an eighth of a mile between the three-fathom curves at low water, and then widens again, with a small bight having six fathoms water on the Gravina shore.

Hitherto the channel northward of Pennock Island has been used by steamers, as the southern one was unsurveyed. Hereafter the northern one will doubtless be entirely discarded, as, though slightly narrower than the former, the southern passage has no channel dangers, and all that is necessary to pass it safely is to keep in mid-channel or a little north of mid-channel from one end to the other.

The Revillagigedo shore hereabouts is low near the water, rising rapidly to mountains two or three thousand feet in height; as a whole it becomes lower westward.

At the western end of Pennock Island are two islets which connect at low water; behind them is a good boat harbor. Westward from the western end of Pennock Island, marked by kelp and with its highest point awash at low water, is *Pennock Reef,* which extends somewhat less than half a mile westward from the island but out of the channel.

From a point **W NW.** nearly a mile from the western extreme of Pennock Island, on the northern shore of Tongass Narrows, westward along that shore the latter becomes *foul,* and especially about the point mentioned, called **Bar Point** by Captain George. In passages made by the southern side of Pennock Island this shoal, which extends off nearly a quarter of a mile, is not in the track of navigators. Close in to the Gravina shore, **SW.** from Bar Point, and connected with the shore at low water, is **Seat Island,** so named from a conspicuous and peculiar seat-shaped rock at its outer end. From Seat Island it is well to keep about two-thirds of the way from the north to the south shore, after which for two miles the northern shore is free from dangers and the channel perfectly clear.

At three and three-quarters miles from Pennock Island **Lewis Point** makes out from the Gravina shore, with some small dry rocks about it and *a rocky shoal* extending northeastward from it an eighth of a mile. This has been called the *Lewis Rocks* by local navigators; they cover at half tide. Hereabouts, the northern shore should be kept on board. Diagonally across the channel, on the opposite shore from Lewis Point, is a high-water island, very narrow and parallel with the shore, which is locally known as **Peninsula Point.** Westward the channel widens at once and continues to do so until it terminates.

The observation spot of 1882, situated one-third of the way west from the eastern to the western end of Peninsula Point, was determined to be approximately in

Latitude ..... **55° 22′ 43″ N.**
Longitude ..... **131° 43′ 33″ W.**

The easterly variation of the compass was 28° 17′ in 1882, and the dip 74° 36′ 23.″

* Also called **Wayanda (or Wyanda) Rock,** both vessels having touched it.

Commencing at a point in mid-channel two miles eastward from Peninsula Point a course **W NW.** for Channel Island clears all dangers.

A little less than a mile and a quarter **W.** by **N.** ¼ **N.** from Peninsula Point is **Channel Island,** a small, rounded, wooded islet, forming an excellent landmark in the strait both for avoiding dangers and marking the entrance to Ward Cove. Rocks extend less than half a cable from it **NW.** and **SE.** There is a clear passage on either side of the island.

A little less than half a mile **NW.** from Channel Island is the southwestern end of *a reef* which extends thence northeastward two cables, being bare during high water at two spots, one a rocky ridge of small extent, the other **Danger Island,** wooded and rounded, fifty or sixty yards in diameter. Northeastward from Danger Island, off a small rocky bight containing several high-water islets, is a series of five islets and several rocks, arranged in a curve convex northward and nearly connected by reefs at low water. The easternmost of these islets has rocks extending **SE.** half a cable from it, and is known as **East Island.** Between this and the shore, three-eighths of a mile east from it, is the entrance to Ward Cove. Coming westward the entrance opens from mid-channel when Peninsula Point bears about **NE.** ½ **E.** The approach to Ward Cove may be known from Channel Island and from the high hills situated on the west shore of the cove; these hills are conspicuous after passing Pennock Island going west. They are shaped like a double saddle, the middle peak being the higher.

Ward Cove* is about a mile long north and south and one-third of a mile wide. A creek forming a small bank at its mouth falls in at the head of the cove. In the entrance the U. S. Coast Survey steamer *Hassler* found bottom at twenty-five fathoms. Where the cove widens to the westward, within the entrance, seventeen fathoms were obtained, and at half tide twelve and a half fathoms, rocky bottom, when the East Island was close on with the west point of entrance of the cove. East of this line the bank before referred to lies at a cable distant, and *a rock* was discovered by Lieut. Bolles of the *Hassler* which has about three feet of water over it at low-water springs. The ridge of this rock or ledge, which has been named *Bolles Ledge,* was found to run **NE.** and **SW.,** but the space included by the three-fathom curve is rounded and about fifty yards in diameter. All around this there is five or six fathoms water and a clear channel eastward from the rock. The depth of water in Ward Cove, except about the ledge, deepens from eight or ten fathoms near the head to eighteen in the middle and twenty-five towards the entrance. A sketch chart (soon to be followed by a much better one) of this locality, with a sub-sketch of Revillagigedo Channel, has been issued by the U. S. Coast Survey as Harbor Chart No. 712.†

DIRECTIONS

FOR WARD COVE.

The range, East Island open of the west shore of the entrance **SW.** by **S.,** passes over the *Bolles Ledge.*

In entering, keep in mid-channel until the cove begins to widen to the westward, when keep the western shore about a cable and a half distant until East Island is shut in by the west shore of the entrance **SW.** by **S.** ½ **S.,** then head **NW.,** and anchor in twelve to fifteen fathoms with the middle of the creek at the head of the cove bearing **NE.** by **N.** ⅓ **N.**

This cove is ~~hardly~~ large enough for ~~more than one vessel, but affords a convenient refuge for a vessel delayed in entering or leaving the narrows.~~

The greatest range of tide observed here was twenty-three and a half feet. The average range is about sixteen feet.

Westward from Danger Reef and Island the Revillagigedo Channel is wide and clear, being over a mile wide and with a clear ship channel nowhere less than three-quarters of a mile.

Two miles **W.** by **N.** from Channel Island is **Rock Point,** a projection of the Gravina shore, off which a *reef,* dry at low water and steep-to, extends **E NE.** a quarter of a mile. Eastward from it is a bight by which it may be known, and which indents the Gravina shore to a depth of three or four cables; it has a beach at its head instead of the usual rocky shore of the passage, and its eastern half is occupied by banks with one to four fathoms water.

By keeping Channel Island open south from Peninsula Point until Danger Island or Rock Point is abeam, Rock Point reefs may be avoided. In ordinary weather the outer rock of these reefs is visible, being dry at all tides and steep-to.

Nearly a mile and a half **NW.** by **N.** from Rock Point, and two cables off the northern shore, is *Pond Reef,* less than a cable in length, parallel with the shore and about thirty-five yards wide. Four

* Named by the Hudson Bay Company after one of their officers.

† On the edition of this sketch issued February, 1883, from deficiency of data the compass for Ward Cove has been shifted to the eastward a point and a half too far, so that, for instance, magnetic north by the compass is really magnetic north by east half east. A very much better chart of Ward Cove and Revillagigedo Channel is in process of preparation for publication and will shortly be issued.

to six fathoms may be had between the reef and the shore north of it. It is not in the way of navigators who keep at a cable and a half from the northern shore. A course W. by N. from Danger Island, or E. by S. ¾ S. for Channel Island, clears all dangers west from those islands.

West a mile and three-quarters from Rock Point is **Point Vallenar**, from which **Point Higgins** bears N. a mile and a half.* Both these points are rocky, comparatively low and wooded. They form the western points of entrance to Revillagigedo Channel. Point Higgins is not particularly conspicuous, and rounds gently to the NW. and N. without off-lying dangers, and bold-to.

Point Vallenar is extended in a W NW. direction by two principal islets, several rocks, &c., for half a mile, beyond which a mile and a half W NW. from the end of the point is **Guard Island**, named by local navigators, and consisting of rocks uniting at low water, two low, rocky, high-water islets, one west from and considerably larger than the other, and both bearing shrubs and a few trees. The channel is to the northward of Guard Island. The passage between the island and the rocks off Point Vallenar contains kelp patches and should not be attempted until more is known of it. Guard Island itself should not be approached too closely, as there may be lurking rocks near it. The ebb-tide from Behm Canal makes southward with considerable strength across the entrance of Tongass Narrows, and should be taken account of in laying a course.

Current.

SAILING DIRECTIONS

FOR REVILLAGIGEDO CHANNEL.

Passing southward from Boat Harbor Point at a distance of about one mile the course will be NW. ½ W. about twenty-three miles, when Twin Islands should be abeam one mile distant to the southward.

One and a half miles farther NW. ½ W. the course should be changed to W. ⅛ S. eight and three-quarters miles, which will leave the easternmost Hog Rock at least two-thirds of a mile abeam to the southward and bring Angle Point, Bold Island, abeam northward, distant a quarter of a mile. Thence a course W. by N. ¾ N. three miles will bring Spire Island Reef (off what is known as Reef Point on U. S. Coast Survey Harbor Chart No. 712) abeam, distant nearly half a mile SW. by S. In general, to avoid Spire and Cutter rocks keep Walker Island on or nearly on E. by S. ¼ S., with Angle Point between Mountain and Reef Points, which clears both dangers. When Spire Island Reefs are abeam, as above-mentioned, a W. ⅛ S. course four miles and three-quarters should bring the southeastern angle of Pennock Island to bear NE. by N. three-eighths of a mile distant, the vessel being then in mid-channel of the eastern entrance to the clear passage south of Pennock Island.

(NOTE.—In passing Spire Island Reefs it should be remembered that the tide changes at this point The ebb-tide coming down George Arm and Carroll Channel divides at Spire Island, passing to the eastward along Bold Island and down Revillagigedo Channel, and to the southward and westward into Nichols Pass. The ebb through Tongass Narrows also runs into Nichols Pass.)

Between Pennock Island and the Gravina shore the navigator should keep in mid-channel or slightly to northward of mid-channel, and so continue until Channel Island appears in mid-channel W. by N. ¼ N., when the course will be direct for Channel Island, which on coming up with it may be passed north or south from it at a cable distance, leaving Danger Island Reef in the former case about one cable to the northward. Danger Island astern E. by S. or Channel Island astern E. by S. ¼ S., carries clear of all dangers until Guard Island is abeam southward, and should be rounded west from it, bearing in mind the current which at ebb sweeps southward from Behm Canal.

DIRECTIONS.

TONGASS NARROWS TO CLARENCE STRAIT.

From Guard Island the course is W. by S. ¼ S. into Clarence Strait until Point Stanhope opens W. from Ship Island, when a course may be laid for Point Stanhope about NW. ¼ W.

ETOLIN, ZAREMBO AND ASSOCIATED ISLANDS.

The next passage in order of description is that between the Gravina and Prince of Wales groups, forming the southern section of Clarence Strait.

*These two points were named by Vancouver after Señor **Higgins de Vallenar**, then president of Chile. This, as pointed out by Darwin, is a singular instance of transformation of a name, originally that of an Irish family, whose representative, **O'Higgins of Ballenagh**, became naturalized in Chile.

CLARENCE STRAIT.

This strait* is second in importance, in the Alexander Archipelago, only to Chatham Strait. It extends from Dixon Entrance *to* Sumner Strait in a **NW.** by **W.** direction one hundred and seven miles, with a width varying from three and a half to twenty miles and averaging about six miles. Its eastern shore is formed by the Gravina Islands, the mainland, Etolin and Zarembo islands; the western shore by part of the coasts of the Prince of Wales Archipelago. As a whole the strait is remarkably free from obstructions, but the northern extreme is somewhat embarrassed by islands; the waters are deep, the shores moderately high, usually bold, and more or less densely timbered.

Cape Northumberland, the eastern extreme of the southern entrance previously described, is the southern extreme of **Duke Island** of the Gravina Group, unsurveyed, moderately high, rising to high peaks, of which the most remarkable is Mt. St. Lazaro, before mentioned, a landmark from the southwest for many miles, and separated by Felice Passage from **Annette Island**, the middle one of the three principal islands of the group. Its northern and eastern shores are but recently surveyed, and comparatively little is known of the remainder. Its southwestern extreme is **Point Davison.**† A *reef* extends in a southwesterly direction a mile and a half from the point.

Point Davison forms the western extreme of a large bay, whose entrance, nearly five miles in width **NE.** by **E.** ½ **E.** and **SW.** by **W.** ½ **W.**, is largely taken up with **Hotspur Island**, of moderate size, and a multitude of islets and rocks. These form a group or chain nearly closing the entrance of the bay, and to the southwestern islet or termination of the cluster Vancouver gave the name of **Point Percy.** There is a passage to the westward of Point Percy, another to the eastward of the group of islets, and a third between the island in the bay and the main shore of Annette Island.

These passages lead to the sheltered waters at the head of the bay known as Tamgas Harbor, a name applied by Russian authorities.‡ On the charts the western entrance alone is sufficiently represented to be described. It was surveyed by Etolin in 1833. According to his plan on Russian Hydrographic Chart No. 1396 the distance from the islet of Point Percy north and west to Point Davison is about two and a quarter miles. Off the latter is **Karablin** or **Ship Islet**, of small extent and about two cables from the shore. From the point the shore trends to the north and east three and a quarter miles, with islets and rocks extending off in some places as much as a mile. **Tamgas Harbor.**

The Russian track is laid down in mid-channel between these shore islets and those of the Percy Group, north and east from the entrance, about three miles to the northwest point of Hotspur Island before mentioned. The track passes close to an islet which appears to be bold-to at this point. Behind the islet anchorage is indicated in less than twenty fathoms. From this vicinity the channel contracts to little more than a mile and takes a more northerly direction for three miles. There are two small islets near the narrowest portion of this passage at its southern entrance,—the track being indicated a third of the way from the eastern islet towards the other. The latter has *a sunken rock* close to its **SE.** side, and *a four-fathom patch* a little more than a quarter of a mile northward from it. Beyond this two anchorages are indicated in seventeen and twenty-one fathoms, muddy bottom, on the western side of the passage, a third of a mile from the shore. The soundings then begin to diminish to fourteen and twelve fathoms; the passage turns rather abruptly to the westward, contracting to less than half a mile in width, of which little over a quarter of a mile is clear channel,—the shores on either side being shoal for about a cable, when the passage expands into a fine basin two and three-quarters miles in length north and south and a mile and a half wide. ***Sunken Rock.***

From the low southern point of entrance into the basin *a shoal* extends a cable and a half, in a direction the same as that of the point, which should not be rounded within a third of a mile. Anchorage may be had almost anywhere in the middle part of the basin in from nine to twelve fathoms, muddy bottom. From the western and northeastern shores several *shoals* are indicated as making off to the extent of nearly half a mile. The land appears only moderately high and wooded.

The harbor was placed by Etolin in

Latitude	**55° 03′ N.**
Longitude	**131° 30′ W.,**

with a variation of the compass in 1833 of **26°** easterly.

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* Named **Duke of Clarence's Strait** by Vancouver, a name whose length may advantageously be curtailed. It has also been termed **Clarence Sound.**

† Named by Vancouver, and placed by him in latitude 55° 0′.5 N. His boat party camped for the night in a small cove near this point. The survey of these shores made in 1883, by Nichols, has not yet been received.

‡ Sometimes given as **Tongas, Tongass,** &c. The name is doubtless derived from the same source as that of Fort **Tongass,** but it seems desirable to retain the difference in form for the sake of discriminating between the two anchorages.

Tebienkoff, however, gives the position of the inner anchorage as

Latitude	55° 02′ N.
Longitude	131° 26′ W.,

and states that the rise and fall of tides amounts to fourteen feet. On Tebienkoff's rendering of Etolin's sketch an intimation appears that the compass on the latter is magnetic and not true, as it seems to be intended. Any bearings taken from it would, therefore, be subject to a doubt, for the clearing up of which data are not now accessible.

Gravina Island is separated from Annette Island by Nichols Pass. It is the northernmost of the group which received the name of Gravina Islands from Caamano, and which extends twenty miles from the pass above mentioned in a northwesterly direction. The portion of the island adjacent to the passage is low and wooded. Its shores are but recently surveyed; on its southern and western shores are several small indentations, and it terminates to the northwest, as previously described, in Point Vallenar, of which a submarine continuation produces *a reef* and some islets in the direction of its trend.

PRINCE OF WALES AND ASSOCIATED ISLANDS.

The western shores of Clarence Strait are formed by the **Prince of Wales Archipelago**, originally so named by Vancouver, frequently called Prince of Wales Island, but in all probability embracing a number of distinct bodies of land, separated by passages little known or unexplored. The topography is broken or varied, but on the whole less abrupt in character than that of the mainland, and, except in the northern portion, not attaining anywhere to great elevations nor forming specially conspicuous peaks. Few of the summits rise above the snow-line; there are no rivers of large size, and the land is heavily wooded, principally with coniferous trees. The islets and passages are generally narrow, with compact shores, and apparently less obstructed by rocks than those to the northward and eastward. The southern and western coasts are much more broken than the eastern, and especially the northern ones, and of all it may be said that we possess only an approximate knowledge.

From Cape Chacon, the southwestern extreme of Clarence Strait, the shores are broken, bordered by several islets and rocks, and trend to the northward eight or nine miles to the entrance of Gardner* Harbor, a name which first appears upon Russian Hydrographic Chart No. 1396, prepared by Kupreanoff, and published in 1848. No plan of the harbor has been found, but it is indicated on the Russian charts as an entrance with an islet and a rock in it, within which a basin expands affording anchorage, altogether forming an inlet about a mile and a half wide and two miles in length. Russian authorities indicate the course in entering to be to the northward of the rock and islet, but there are no details of depth of water or position. The entrance is in the vicinity of

Gardner Harbor.

Latitude	54° 50′ N.
Longitude	131° 45′ W.

If we may rely on the observations of Brundige (see p. 64), the reef named by the U. S. Coast Survey *Brundige Rock* lies midway between the entrance of Gardner Harbor and the rocks south of Duke Island in the entrance of Clarence Strait.

The land between Cordova Bay, Clarence Strait, Dixon Entrance and Moira Sound appears to consist of a congeries of islands. It is doubtful whether the word "Archipelago," inserted over this vicinity on Russian Hydrographic Chart No. 1396, is intended to apply to the whole area above mentioned, or whether it applies to the small unsurveyed Kendrick Bay, filled with islands, situated about two miles to the northward of Gardner Harbor; and which, by an angle in the track laid down on that chart, is indicated as having served the Russian vessels as an anchorage. Beyond this indentation the coast rounds to **NW.**, and at a distance of about seven miles another large bay offers, according to some authorities, a number of unexplored arms which may contain anchorages. This bay, named Ingraham Bay,† by the U. S. Coast Survey makes in several miles to the southward and at its entrance is a mile and a half wide.

Kendrick Bay.

Immediately to the **NW.** from it is **Chichagoff Bay or Harbor** of Kupreanoff, which name‡ has been improperly transferred on British Admiralty Chart No. 2431 and U. S. Hydrographic Chart No. 225 to the bay just previously mentioned. Of the present bay the charts only afford the information that it is of small extent and was visited for anchorage by Russian vessels. The land forming the northern headland of this bay is a promontory about a mile wide, from which, according to most

* The name of **Port Gardner**, which has been applied to it, had been previously used by Vancouver in Puget Sound.

† In honor of Joseph Ingraham, master of the brig *Hope*, of Boston, in 1791–92, to whose unpublished notes and charts we are indebted for valuable hydrographical information. Kendrick was mate with Robert Gray and was the first to circumnavigate Vancouver Island and determine its insular character.

‡ Sometimes spelled **Tchitchagoff**. Tebienkoff's name of this harbor is very obscurely printed upon his chart No. IX.

authorities, a group of small islands and rocks extend **NW.** by **N.** about three miles. According to Tebienkoff, however, whose chart shows more detail in this vicinity than any other, these islets are divided into two groups, with the passage (which other authorities place to the westward of all the islets) between the two groups about a mile wide and leading in a southerly direction into the extensive inlet named by Vancouver Moira Sound. The entrance within the islets is a little less than two miles wide. The two principal ones between which the channel is appear to be about half a mile long and wooded. The land about the sound is high and rather abruptly descending to the shore. The sound, according to Tebienkoff, penetrates the land for some ten miles, first extending four miles to the southward and then about six miles to the west and north,—the head being in the vicinity of several other arms of the sea which extend from Cordova Bay and Cholmondeley Sound. Two unsurveyed arms, apparently of no great extent, extend from the vicinity of the bend to the southward. This and the next inlet to the northward require more careful examination. The entrance to Moira Sound lies in about latitude **55° 3′ N.**

Moira Sound.

About **N NW.** from its eastern headland six miles lies **Wedge Island,** named by Vancouver, low, somewhat over a mile long, situated off the mouth of an indentation in the main shore and two or three miles to the northward of its eastern head. This island "in many points of view resembled a wedge; * * * from its south point lies a ledge of dangerous rocks on which the sea broke with great violence."* Between it and the shores of the bay to the westward lie *several rocks* and islets. Vancouver remarks: "As we advanced beyond Wedge Island the straight and compact shores were more moderately elevated, and the interior country was composed of lofty though uneven mountains, producing an almost impenetrable forest of pine trees from the waterside nearly to their summits." The latitude of Wedge island is about **55° 8′ N.** according to Vancouver. Southwest from the island inland is a sharp mountain peak resembling Mount Calder in shape.

From the northern end of the island about **NE.** four or five miles, across the strait, lies **Dall Head,**† on Gravina Island, a bold high bluff, whose western slope descends to a low point terminating in two small islands from which projects *a reef* marked by *two rocks awash.* When approached from the northward this high land is said to present the perfect outline of a man's features. Northward from Dall Head the Gravina shore is mountainous, southwestward from it the shore is low and broken into many small islands. The head is a noted landmark, and received its name from the shipmasters engaged in fur-trading or commerce in this region.

From the head, **NW.** by **W. ½ W.** nine miles, lies **Point Chasina,** apparently a native name adopted by the Russians.‡ This point is a broad promontory two miles wide, facing to the northward with a somewhat irregular shore-line, wooded, tolerably low, and having a small islet immediately off its middle part. It is situated in about latitude **55° 17′ N.,** and immediately to the westward of it is Cholmondeley Sound of Vancouver.§ This inlet is unsurveyed, but is represented by Tebienkoff as long and narrow, extending nearly thirteen miles in a southerly direction, and having a width of about two miles. It has no subsidiary arms according to his chart. The **Chasina** settlement of Indians is situated just within the entrance, on the eastern shore. An anchorage is indicated between the northwestern extreme of Point Chasina and some islets, but no depth of water is recorded. Off its northeastern point Vancouver anchored in forty-seven fathoms. The head of the sound is near that of Moira Sound and Tliakaek Bay, an arm of Cordova Bay. The land between these bodies of water is denominated by some Russian authorities as the **Kaigan Portage.**

Cholmondeley Sound.

The largest of the islets above mentioned is **Skin Island,** probably named by the traders, low and of small extent. It lies less than two miles **NW.** by **W. ¾ W.** from the northwestern extreme of Point Chasina. When on with the land it can be distinguished from Point Chasina by its white water-line. From this vicinity the main shore of Prince of Wales Island extends to the northwest, nearly straight and with a number of islets off it, for about eight miles, to **Island Point,** at the entrance of Kasa-an Bay,‖ a name derived from the native appellation. The point mentioned forms the southern headland of the entrance of the bay,—the northern headland being that named by Vancouver **Point Grindall,** and sometimes referred to as Cape Grindall.¶ A very hasty reconnaissance of Kasa-an Bay was made by the U. S. Coast Survey in May, 1880, from which the following details are derived.**

Kasa-an Bay.

The two headlands are four or five miles apart, nearly **N.** and **S.,** and the general direction of the bay from the entrance is **W.** by **N.**

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* Vancouver, vol. ii, pp. 380–381.

† Named after Captain C. C. Dall, of the P. M. S. S. Co.'s service.

‡ Erroneously rendered **Point Charm** on the British Admiralty charts and also on some others. It has also been used in the form of **Chasen** or **Tchaseni.**

§ **Chasina Bay** of Tebienkoff.

‖ Variously rendered **Kazarn, Casaan,** &c., and even **Karta** on British Admiralty Chart No. 2431.

¶ Sometimes called by the traders **Cone Point.**

** There is no published map or chart of this bay of even approximate correctness except the small sketch included in chart No. 7 of this volume, from observations by Marcus Baker, U. S. Coast and Geodetic Survey.

Off Point Grindall in an **ESE.** direction lies **Grindall Island,** separated by a passage somewhat less than half a mile wide. This passage is navigable, the steamer *California* having passed through it at low water. An islet and *reef* project from Point Grindall in the direction of its trend two cables, and there is an islet and two rocks under the **SW.** shore of Grindall Island, but these dangers appear to be fully visible in fair weather. Grindall Island is about a mile in length, flattish, with a knobby hill rising about a hundred feet and covered with small timber. At its **NW.** end is a bank on which anchorage may be had in ten fathoms; at the **SE.** end of the island are a couple of rocks close in.

Half a mile north from Point Grindall is another small islet of bare rock ten feet high.

In mid-entrance to Kasa-an Bay, about two miles **S SE.** from Point Grindall, are three islets trending **E NE.** and **W SW.** The outer one, **High Island,** is rounded and high. They are all wooded, but the two inner ones are low. The channel generally used is that northward from High Island, though there is a clear passage on both sides. The water is deep. Entering the bay the northern shore is mountainous, compact and heavily timbered. The beaches alternate with rocks and shingle. About four miles from Point Grindall *George Reef* makes out in a southeasterly direction from that shore three or four cables, mostly visible. About a mile **SW.** from this reef a *sunken rock* is reported,* which therefore would be nearly in mid-channel. This rock, of which we have no details, would appear to be very dangerous if correctly located and should be looked out for. About ten miles westward from Point Grindall a peak rises two thousand feet. Near the shore hereabouts copper ore exists. The southern shore is greatly broken. Just within Island Point is a large unsurveyed bay, extending southward, called Skowl Bay, with an Indian village at its head, of which settlement Skowl is said to have been the principal chief. Traders have anchored in this bay, which is said to divide near its head and to have its shore near Island Point infested with *rocks.* **SW.** $\frac{1}{2}$ **W.** from Point Grindall three miles is **Skowl Point,** the eastern end of **Skowl Island,** from which *George Reef* on the northern shore bears **NW.** by **W.** under a ragged cliff. There are some small islets and rocks above water, close into the northern shore of Skowl Island, which extends westward three or four miles. Westward from this is **Long Island,** with its northern shore indented and about two miles in length. South from Skowl Island the shores are much broken and unexplored. Southward from Long Island is a deep opening, **Baker Inlet,** just to the westward from which another narrower inlet opens, which, from the distance it is said to extend to the southwest, is called **Eighteen-mile Arm.** By this canoes reach a low portage over which one or two days' walk is said to carry one to Tlevak Strait or Port Bucareli. The gap looks as if it cut the island in two. The land west from the northern point of entrance to this arm is low, broken and timbered. About a mile **NW.** from the **NW.** part of the Long Island group is a small islet called **Round Islet.**

Round Island open of Point Grindall **W.** or **W.** $\frac{1}{2}$ **N.** is reported by Pilot George to clear all dangers from Point Grindall to the fishery and leads to the anchorage. Or, after passing Long Island, a white patch at the head of the bay may be steered for until the anchorage at the fishery is in view.

On this line for the most part the water is more than twenty fathoms deep; at ten miles from Point Grindall it shoals to fifteen fathoms. About twelve miles westward from Point Grindall the northern shore rounds to the north and becomes lower; a rather wide (five or six miles) bay is formed, full of low wooded islands, the unexplored waters of which are said to be shoal and dangerous. Fifteen miles **W.** $\frac{1}{2}$ **S.** from Point Grindall, on the southern shore, a small cove makes in southward and eastward. Here is situated the **Kasa-an Anchorage** and the small settlement known as **Baranovitch Fishery.** The buildings are situated on the eastern shore of the cove. In rounding to the anchorage is in eight fathoms, soft bottom, with the house bearing **SE.** by **E.** At the wharf there is but six feet of water at low tide; off the end of the wharf four fathoms, soft bottom. West from the end of the wharf in the middle of the cove is a *nine-foot shoal.*

West of the cove a deep gap in the high land of Prince of Wales Island is visible; a two or three days' portage is practicable here, leading towards Klawak. South from the anchorage a peculiar peak is visible in the distance. The settlement was founded by Philip Baranovitch, and has since his death been occupied by his family and others. A stream comes in at the head, where a salmon fishery has been established, the fish running in July and August, and about one thousand barrels being put up here in a season. The position of the anchorage, according to the U. S. Hydrographic Office Chart No. 225, is about

Latitude ---------- **55° 28′ N.**
Longitude ---------- **132° 19′ W.**

The range of the tide is said to be sixteen feet. Two days after new moon it is high water at 1 p. m. at the anchorage. In May, 1880, the declination was determined to be 27° 48′ easterly, and the dip 73° 58′, by the U. S. Coast Survey. This is stated to be one of the finest bays in this region, the harbor good and easy of access; cod and halibut very abundant in their season; the spruce and yellow cedar attaining great size on its shores.

* By Mr. Ishe, a resident miner.

Kasa-an Bay is erroneously represented by Tebienkoff (chart IX,) as connected with Tolstoi Bay to the northwest. Though their extremes must be very near each other, it appears from a sketch of Tolstoi Bay, made by the *Hassler* party in 1882, that they are not united.

Up to this point, with the exception of Brundige Rocks and dangers immediately adjacent to the shores, so far as yet known, Clarence Strait is clear of obstructions to navigation.

From Point Grindall the coast trends **NW. ¾ W.** for about fifteen miles, with some irregularities, to **Broad** (in Russian, **Tolstoi**) **Point**, a high, rounded, thickly-wooded, steep promontory, immediately westward from which is Tolstoi Bay, named by Nichols, in 1882, from its proximity to the point, though the bay itself is long and narrow. This bay is unsurveyed, but a hasty sketch was made by Nichols in 1882, which affords some idea of its principal features. **Tolstoi Bay.**

From Broad Point two miles and a half **W.** by **N. ½ N.** is the opposite extreme of a bight which indents the shore in a southerly direction about a mile and a half. The western shores of this bight are not well known, but they are irregular and more or less fringed with islands. The eastern limit of the bight is formed by the western head of Tolstoi Bay. From a spot three-quarters of a mile **W.** by **N. ½ N.** from the northern extreme of Broad Point a line **S. ¾ E.** trends directly to the head of Tolstoi Bay and passes nearly in mid-channel. At one mile from the starting point on this line Tolstoi Bay is less than a mile wide; at two miles there is a small opening abeam on the western shore and the water is still more than forty fathoms deep; at half a mile farther the bay narrows to less than half a mile with water between thirty and forty fathoms; at half a mile farther the bay narrows to three-eighths of a mile with twenty to twenty-eight fathoms, and then widens a little to form a sort of basin a mile long **N.** and **S.** and half a mile wide. The eastern point of entrance to this basin has some rocks and an islet close in. On this side of the bay farther south there are several islets and a rocky patch with four to eight fathoms over it. There is anchorage in the middle of the northern half of this basin in eight to thirteen fathoms, fine gray sand. The soundings are uneven and the bottom in many places rocky, but it is considered by Nichols to be a pretty good anchorage. Northerly and southerly winds must draw through with considerable force, and the fact that the anchorage is more than three miles from the entrance would, in general, detract from the availability of this bay as a resort for vessels. There was formerly an Indian village near the entrance at which the Russian trading vessels visited, but they never penetrated to the head of the bay.

NW. ¾ W. about twelve miles from Grindall Island, on the eastern shore of the strait, lies **Ship Rock** and **Island**, about half a mile broad-off **Ship Island Point** of the mainland. The islands or island, for the two appear to be connected by reefs, are separated from the point by a passage which Vancouver reports navigable. The group is composed of two islands, very narrow, high, wooded, with eight or ten trees which are conspicuous from the southward, and elongated in a **NW.** by **W.** and **SE.** by **E.** direction. The rock is the easternmost, bare and black. The group forms an important landmark and its position should be accurately determined. Here Clarence Strait is about five miles wide. With Ship Island abeam, Point Stanhope is clearly visible about **NW.** by **W.** Eastward from it appear, first a high flat-topped mountain, and farther east a somewhat lower round-topped one. The main coast northward is mountainous and thickly wooded. Ship Island relatively to Point Grindall, etc., is erroneously located on all the sailing charts in common use. The rocks represented as extending **S.** and **W.** from it do not exist.

N. by **W. ½ W.** somewhat over seven miles from Broad Point lies **Point Lemesurier** of Vancouver,* forming the southeastern point of entrance into Ernest Sound. This point stretches prominently out from the mainland as a peninsula about four miles long and one or two miles wide, united to the mainland by a rather narrower isthmus, on either side of which a small bay or cove is formed. That to the south of the isthmus is quite small with some islets off it.

In approaching Point Lemesurier from the southward it appears long and low; several peaks of the Stikine range can be seen over it, some of them snow-capped, the most prominent and highest is rather sharply conical. The southern side of Point Lemesurier is full of indentations; near its junction with the main are several small islands close in. Off the end of the point are two small rocky islets about twenty-five feet high, and two or three cables farther, in the same trend, a *sunken rock* is indicated by U. S. Hydrographic Office Chart 225, after Vancouver.

From the extremity of the point Vancouver noted some *rocks* and *breakers* extending about a mile from it, in a direction **W.** by **S. ¾ S.** according to the Russian Hydrographic Chart No. 1493. Vancouver placed the point in latitude 55° 46′ **N.** The bay on the northern side of the isthmus connecting it with the mainland is indicated as a stopping-place of Russian traders, but without any details. It has been called **Union Bay** on some unpublished charts.

About **W. ½ S.** seven miles from Point Lemesurier lies **Narrow Point**, or **Tonki**† of Russian authorities, an inconspicuous and apparently rather low wooded point, to the northward of which

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* Sometimes written **Point Mesurier.**

† **Point Tonkey** of U. S. Hydrographic Office Chart No. 225.

Tebienkoff locates an anchorage. In this vicinity the width of Clarence Strait is four or five miles. Narrow Point cannot be made out on approaching it from the southward, but, after passing it, it is seen to be a small, steep bluff, projecting in a northerly direction into the strait.

To the **NE.** and abreast of Narrow Point, on the other side of the strait, is an assemblage of islands about eight in number, most of them quite small, forming the southwestern point of entrance to Ernest Sound, and to the southern termination of which Vancouver gave the name of Point Onslow.* In this vicinity rocks are indicated near the so-called point by most authorities. These islands and the shores northward and westward from them for ten or twelve miles are little known. The coast is apparently much broken, and numerous inlets or basins are indicated by Russian authorities.

This shore extends in a **W NW.** and **E SE.** general direction, according to Nichols' observations, with several small islands one or two miles off shore. North of the southeastern group of these an anchorage exists of which no further information is at hand. Half a mile to the **SE.** from the easternmost of the other group is *a rock* which covers at high water.

The southern third of Etolin Island is extremely low, flat, wooded, and its shore much broken by indentations. The northern part is higher and much more abrupt.

From Narrow Point the shore takes a westerly direction for some six miles to Ratz Harbor of Tebienkoff, who indicates it as a basin nearly two miles long and about a mile broad, with a very narrow entrance obstructed by an islet, and in which anchorage may be had in sixteen fathoms. At the distance of two or three miles the entrance to this harbor cannot be distinguished from the unbroken shore. It is reported that there is only room in it for one small vessel. The entrance is placed by Tebienkoff in about latitude **55° 52′ N.**, whence the coast trends about **W NW.** for ten miles.

Ratz Harbor.

NW. ½ N. from Narrow Point twelve or fourteen miles—the charts being discrepant as to the exact distance†—is **Point Stanhope** of Vancouver, situated in latitude about **56° N.** It is represented on the charts as a low peninsula, rather narrow, and with compact shores. In reality it appears like an archipelago of low wooded islets, and it is possible that several of the indentations noted may extend to Mosman Inlet. At all events the shore is fringed with islands, and off the point is one in particular off which are *some rocks* extending, according to Russian authorities, not over a mile and a half from the point. Northwesterly from this island about a mile is *a sunken rock*. Beyond the westernmost of these islands is a large rock of yellowish color, bare at all tides. The southeasternmost or Stanhope Island, near the point, is the most prominent. The others are difficult to distinguish as they lie against the indented shores. They form a continuous range with the one nearest the point. A reef extends to the **E SE.** from the eastern part of Point Stanhope to a distance of two or three cables. Eastward from Point Stanhope two or three miles is a point of Etolin Island extending to the eastward. Between this and Point Stanhope is the entrance of **Mosman Inlet**, a large unexplored basin eastward of the Stanhope Peninsula, supposed to be about five miles in length and to extend to the **W NW.**

From the southward and eastward there is an appearance off Point Stanhope of two islands, both wooded, with a rock off the outer one. When close to, the island, which appeared as above to be the inner one, is found to be situated some distance farther to the north and west and to be composed of several islets. The first-mentioned island, which may be called **Stanhope Island**, is about a mile and a half from the Etolin shore, with *a reef* making off **SE.** by **S. ¼ S.** from the southern end of the island to a small bare rock or islet. From the western end of Stanhope Island another *reef* makes out about **W SW.**, marked by two rocks of which the outer one is covered at high water. Northwest from Point Stanhope the group above alluded to, having the appearance of a single, but in reality consisting of several islands, is separated from Etolin Island by a channel about half a mile wide.

Five or six miles to the northwest from Point Stanhope Vancouver found shelter for his vessels behind and to the north of a small island, between which and the Etolin shore are some rocky islets. He anchored here in seven fathoms over an uneven and partly rocky bottom, and found the situation well sheltered from southerly and southeasterly winds.

This island, which may be called **Screen Island**, is about half a mile long, densely covered with trees, low, and separated half a mile from the Etolin shore. Some distance farther northward and westward is a small wooded islet and a rock, which appear until they are come up with as if they were off the extreme of Point Harrington. They are two or three cables from the shore.

Point Stanhope forms a projection of Etolin Island, the largest of the group to which Vancouver applied the name of Duke of York Islands, and which, as a group, forms the northern and eastern shores of Clarence Strait between Point Onslow and Sumner Strait. These will hereafter be more particularly referred to.

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* Erroneously rendered **Onelow** on Russian Hydrographic Chart No. 1493.

† During several voyages the patent log of the steamer *California* is stated to have registered thirty-two miles between Ship Island and Point Stanhope, an excess of four or five miles over the distance as shown on the charts.

From Point Stanhope a point on the opposite shore bears **SW.** by **W.** six and a half miles. Beyond these points to the northward Clarence Strait widens to ten or twelve miles,—the southwestern half becoming greatly embarrassed by islands. To the eastward of these islands are several *reefs* apparently under water, for which the following positions are taken from Russian Hydrographic Chart No. 1493: **Reefs.**

1. *A reef* whose southern portion bears **W.** by **S.** $\frac{1}{3}$ **S.** six miles from Point Stanhope. This reef is a mile and a half in extent **NW.** and **SE.**, and immediately to the southwestward from it are two small islets, about half a mile apart, trending parallel with the reef.

2. *Another reef*, with its southern portion bearing **W.** by **N.** $\frac{3}{4}$ **N.** nine and a half miles from Point Stanhope. This is somewhat over a mile in extent **NW.** and **SE.**, but appears to have a clear passage a mile wide **SW.** from it, between it and the islands. The course lies to the north and east from these reefs. This shows *three long rocks* trending **NW.** and **SE.** at half tide.

From the southernmost islet, near the south reef above mentioned, a belt of islands and islets, named **Kashevaroff Islands**, extends in a generally **NW.** $\frac{1}{2}$ **W.** direction for about fourteen miles. The eastern margin of the group is pretty compact and well marked, but to the southwest the islets are more sparsely distributed, and between them and the shore an apparently much obstructed and not-to-be-recommended channel exists, named by Russian authorities the **Kashevaroff Passage or Strait.*** It is quite possible that a clear channel may exist here, but in advance of a more detailed examination than it has yet received navigators should avoid entering it, except with great caution.

Nine and a half miles **W.** $\frac{1}{2}$ **N.** from Point Stanhope is **Blashke Island,**† the largest in the southern part of the group. The northwesternmost island is identified by Russian authorities with **Bushy Island**‡ of Vancouver, whose survey in this vicinity was very imperfect. On either side of this island, which is about two miles long, are some detached rocks; a chain of small islets stretches to the westward towards the opposite shore, but to the northeast of the island a navigable passage exists three-quarters of a mile wide.

About northwestward from Point Stanhope is **Point Harrington** of Vancouver, a name transferred on Russian Hydrographic Chart No. 1493, and Tebienkoff Chart No. IX, to the point next northward, but properly belonging to a narrow tongue of land with a rock and islet adjacent to its extremity, forming, according to Vancouver's chart, the southeastern extreme of Stikine Strait.

This point is not conspicuous from a distance. It is low, rough and rocky, and in summer can be recognized by its bright green appearance, due to a dense growth of brush upon it. The peninsula from which it extends is about two thousand feet high and conspicuous in the middle of the strait from the southward. When Point Harrington bears **NE.** by **E.** $\frac{1}{2}$ **E.** about one mile the entrance to Stikine Strait is open, and is recognizable at some distance by an abrupt saddle peak at its eastern side. Immediately behind it is Steamer Bay, in Russian **Parakhotnia,** where anchorage is indicated on the Russian charts. No soundings are given on the published charts, but a manuscript Russian chart shows an anchorage one mile inside the entrance in a cove on the south shore. A note on U. S. Hydrographic Chart No. 225 states that this is a "good harbor." **Steamer Bay.**

From a brief reconnaissance by the *Hassler* at Steamer Bay in 1882 it is learned that the bay is funnel-shaped, with a small basin at its head; the dangers visible were all close to the shores. From Point Harrington the opposite point of entrance bears **NE.** by **N.** about a mile. There is about forty fathoms water in mid-channel. Thence the bay extends about two miles **E SE.**; the narrowest part, a mile and a third from the entrance, is contracted by an island on the north shore to about two cables, with twenty-two fathoms water. A third of a mile farther in the bay shoals from about nineteen fathoms to ten and twelve fathoms, sand and broken shell, where anchorage may be had. A stream comes in at the head of the bay, and the south shores, especially outside of the basin, are broken and irregular. No directions seem necessary for entering.

Opposite the section from Point Stanhope to Point Harrington the south shore of Clarence Strait is low with high land in the distance.

The position of Point Harrington and that of the shores and passages immediately northward from it are in doubt. They appear to be several miles farther north and west than the charts represent.

From Point Harrington **Point Nesbitt** of Vancouver bears **W.** $\frac{1}{4}$ **N.** about six miles and forms the southwestern extreme of Stikine Strait. It is a low wooded point, terminating in *a reef covered at low water.* According to Nichols, **S SE.** three-quarters of a mile from Point Nesbitt is *a dangerous rock* awash at about a quarter ebb.

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* **Kashvarow Strait** of the U. S. Hydrographic Office Chart No. 225, where a passage is indicated between Busby Island and that next east from it.

† Probably named for Dr. Eduard L. Blashke, who visited the colonies with Etolin in the ship *Nikolai*, in 1839–41. It is usually erroneously written **Bloshké.**

‡ The name on Russian Hydrographic Chart No. 1493 is erroneously rendered **Biugam** Island.

The shore about this point and for some distance to the west and north is fringed with rocks, which at the point itself extend off shore as above mentioned a distance of about a mile. The point appears to be high and wooded. Hence the shore of Zarembo Island extends in a generally **W.** by **N.** direction about ten miles.

The navigable channel of Clarence Strait here becomes much contracted. A mile and a half **W NW.** from Point Nesbitt and from that shore *a reef* makes out from a point of the land in a **S SE.** direction an eighth of a mile, which is covered at high water.

Off the northwestern part of Bushy Island *a reef* makes out in a **S.** by **E.** direction, according to Nichols, terminating at a small island.

Between Bushy Island and **Shrubby Island** just east from it there is a passage, apparently rocky, but through which, on U. S. Hydrographic Chart No. 225, a track line is carried passing westward, south of all the islets in the strait, with the shore at Point Colpoys close aboard. When in mid-channel, the northwest end of Bushy Island bearing **W SW.**, Point Colpoys opens. When it bears **SW. ½ W.**, two little wooded islands come out. When these are in one with each other, in the same line northeastward from them, from the Zarembo shore a small point makes out with *a bank or shoal* (no soundings given) a quarter of a mile from it. The Russian track passes between the two, according to Russian Hydrographic Chart No. 1493. Vancouver notes *strong tidal currents* in this vicinity. Tebienkoff, however, gives a different conformation to the shore and omits the bank or shoal.

The U. S. *Hassler* sounded here and got no bottom at twelve fathoms where the shoal is laid down, though the water was discolored and looked shoal. They also noted *strong tidal currents, floating logs* and kelp, with *rips* which gave the passage a dangerous appearance.

About ten miles from Point Nesbitt **W.** by **N.** lies **Point Macnamara,** named by Vancouver, and placed by him in latitude **56° 21′.5 N.** There are several rocks along shore east and west of the point extending off half to three-quarters of a mile. This point forms the northeastern extreme of Clarence Strait at its junction with Sumner Strait.

It is low and wooded, making out to the southwest. There are some rocks closer in than the charts indicate, and no islet at the point, though one is generally put there. **S SW.** from the point, nearer the Prince of Wales sland shore, are three wooded islets, south of which *a shoal* or bank is indicated.

Eight miles to the westward of Bushy Island, according to Tebienkoff, is **Point Colpoys,** named by Vancouver, and forming a somewhat prominent projection of the western shore and the northwestern headland of Clarence Strait at its junction with Sumner Strait. These authorities also indicate some islets or rocks adjacent to the point. On the Russian hydrographic charts prepared by Kashevaroff, however, the coast-line is gently rounded off in this vicinity and no conspicuous point is indicated.

In this vicinity the U. S. Coast Survey observers note that the eastern angle of Point Colpoys when approached from the eastward appears like a long low point projecting quite a distance, but on approaching closer the outer part resolves itself into two small wooded islets and a bare rock between them and connected with them by a reef in either direction. These trend about **E NE.** from the shore. Half a mile farther west the other angle of Point Colpoys makes out in a northwesterly direction, thickly wooded to the water's edge, and terminating in *a reef* marked by two small bare rocks. Here, when approached from the eastward, a small wooded islet is seen, which is probably connected with Point Colpoys at low water and with several *rocks.* The latter make out in a westerly direction about a quarter of a mile into **California Bay,** a large bight which indents the shore to the southward.* To the westward of this bight or bay, which is about a mile and a half deep, the land again makes out **W SW.** to a point about which there seem to be no hidden dangers. From hence the land trends in a **S SW.** direction towards Red Bay.

York Islands.

The islands included between Ernest Sound, Clarence Strait, Sumner Strait, Blake Channel and Eastern Passage were denominated by Vancouver **Duke of York Islands,** a name whose unwieldly length has suggested its curtailment to York Islands. The survey of the group has been chiefly due to Russian observers. It consists of five principal islands, **Etolin, Wrangell, Zarembo, Woronkoffski,** and one named by the survey **Seward Island.** The group is intersected by several passages, especially **Stikine** and **Zimovia** straits, a passage named **Eastern Passage,** and more or less by Ernest Sound and Bradfield Canal. Few details in regard to the navigation of these passages are accessible, and there is no doubt of the existence of serious inaccuracies in all the published charts of this vicinity. For this reason an extended description is not deemed necessary in this place.

ERNEST SOUND

opens on Clarence Strait between Points Onslow and Lemesurier, the clear passage being about two and a half miles wide. The sound extends about twenty-two miles in a generally **N.** by **W.** direction with a width varying from three to eight miles. The western shore is formed by Etolin Island and

* "Bringing the point abeam and abaft the ship on a **W SW.** course, these rocks are lost against the land."—*Nichols' Hydrographic Notes.*

is much broken and little known. The eastern shore has not been thoroughly examined and is formed by a portion of the continent. Both are in general moderately elevated. There are numerous small islands in the sound, and a large one or group of several islands about sixteen miles **N.** from Point Lemesurier. The northern entrance is one or two miles wide, and the northeastern extreme was named by Vancouver **Point Warde** and placed by him in latitude **56° 09′ N.** It separates the waters of Ernest Sound from those of a passage of which the eastern portion was called **Bradfield Canal** by Vancouver, a name which might be extended so as to cover the whole of this passage from the southern entrance of Zimovia Strait eastward.

This canal separates Etolin Island and the mainland from Seward Island and penetrates the mainland to the eastward, having a total length of fifteen or twenty miles and a width of one half to two miles. It terminates, according to Vancouver, in latitude **56° 14′.5 N.**, at a narrow border of low land through which two streams empty into the canal. From Bradfield Canal two arms extend to the northward, one on either side of Seward Island, at whose northern extreme they join, and, giving off a small branch to the northward, the channel thus formed is then continued to the northwestward, finally joining Sumner Strait at its eastern extremity.

The passage northeastward from Seward Island has received from the United States Coast Survey the name of **Blake Channel,*** and opens from the middle part of Bradfield Canal, extending in a generally **NW.** by **W.** direction some ten miles with a width of three-quarters of a mile. At its southern entrance are two small islets and an island. At its northwestern extremity, in latitude **56° 20′ N.** according to Vancouver's observations, a small branch makes to the north about three miles. In this vicinity are numerous rocks.

A passage which is contracted to a quarter of a mile in width passes about three miles to the **SW.** and joins the main channel. This main channel is named on U. S. Coast Survey Chart No. 701 (corrected to 1877) **Eastern Passage.** It extends about twenty-four miles in a northwesterly direction from the western part of Bradfield Canal, between Seward Island and the mainland on the east and Wrangell Island on the west, with a width of from one to two miles, and is represented by all authorities as unobstructed, though its form and direction differ on different charts.

Near the junction of Eastern Passage with Blake Channel the continental shore is somewhat indented, and at the junction a point is formed which received from Vancouver the name of **Point Madan,** a name which has been on nearly all modern charts transferred from the eastern headland of a small bay in the continental shore to the point which forms the western headland of this bay.

Seward Island, which is inclosed between Bradfield Canal, Eastern Passage and Blake Channel above described, so far as known, is of an irregularly quadrilateral form, about twelve miles in length and four or five in width, with very compact shores.

From Point Madan Eastern Passage trends in a generally **NW.** by **W.** direction, and then curves to the westward to its junction with Sumner Strait. Its eastern shore is formed by the continent and that to the westward by Wrangell Island. The width of the passage is about two miles, and it appears to be tolerably free from obstructions.

The northwestern extreme of Wrangell Island, forming the northwestern headland of Eastern Passage, is **Point Highfield,** named by Vancouver, and described as a very conspicuous point.† Its northern face is nearly a mile broad, and the point, specifically so called, is at the western end of this straight strip of shore line. From it **NE. ½ N.** six cables and about four cables off shore lies a small partially wooded islet, called **Simonoff Island** on the English sketch, and Observation Islet on the Russian plan of the Stikine River. Between this islet and the shore the depth does not appear to exceed fifteen or sixteen fathoms, and about half way between the shore and the islet bearing **N.** by **E. ¼ E.** the depth is nine or ten fathoms.

This vicinity is usually known as the Anchorage off Point Highfield, and appears to be free from obstructions.‡

Simonoff Islet has five or six fir trees, a clump of willow, and ~~one~~ 3 small building upon it & large Cross The shore south of it is apparently more indented than the charts indicate. A five fathom patch, not shown on the charts, is reported by Pilot W. E. George. About **E.** by **S. ¼ S.** six or seven cables from the islet, and lying less than two cables from the shore, is *a reef*, a cable and a half in length, which covers at a quarter flood. For this reason vessels entering or leaving Eastern Passage should not round the northeastern angle of Wrangell Island nearer than three cables. Russian authorities represent this reef as a cluster of islets, or omit the reef and place in the same vicinity a cluster of islets, it being difficult to decide which is the true explanation of the discrepancy. The bottom appears to be muddy throughout. The U. S. Coast Survey party, anchoring here in 1869, experienced disagreeable sub-surface and counter-currents. British Admiralty

Anchorage off Point Highfield.

* In 1863 Professor W. P. Blake, of New Haven, Conn., made the first American explorations of the Stikine River near this channel, while in company with a Russian exploring expedition from the corvette *Rynda*.

† This name is transferred to a point on the continental shore five and a half miles to the eastward, on the Russian plan of the Stikine River, dated 1867.

‡ Meade terms it **Point Highfield Harbor**, and, like twenty other places frequented by the traders of the Hudson Bay Company, it is sometimes called **Labouchere Bay** or **Anchorage**, after the well-known old trading steamer of that corporation.

Chart No. 2431 gives a sketch of this anchorage* and states that the rise and fall of tide is sixteen feet but on a Russian plan of this vicinity published in 1867, it is asserted to be eighteen feet. The latter gives the variation of the compass at 26° easterly in 1863; it is now about 29° 16′.

From observations by the U. S. Coast Survey in 1869 and 1882, it appears that the approximate position of Simonoff Island is

Latitude	56° 29′.3 N.
Longitude	132° 22′.7 W.

The form and position of the adjacent islands and points of land are still much in doubt, but it is certain that in general they are several miles farther south than the charts in use would indicate.†

Eastern Passage is separated from Zimovia Strait by Wrangell Island.‡ It is about twenty-three miles long and four or five miles broad, and trends in a generally NW. ½ W. direction from its southern termination.

Between the latter and the shore of Etolin Island, at the western end of Bradfield Canal, is the southern entrance of Zimovia Strait, a name applied by the Russian explorers.§ This body of water, at its entrance about a mile broad, trends to the westward for two or three miles, at the same time expanding to more than three miles in width, and becoming much obstructed by rocks and islets. On the Wrangell shore in this vicinity Tebienkoff locates a village of the Stakh-hin T'linkits. Hence the strait trends NW. with a width varying from one and a half to three miles. About nine miles from the southern entrance is the mouth of a good-sized bay on the Etolin shore. About thirteen miles from the same locality is the northern extreme of Etolin Island, separated from Woronkoffski Island to the NW. by Chichagoff Passage, two miles and a half wide at its eastern entrance, three miles long, containing an islet, and connecting Zimovia and Stikine straits. At about the intersection of the mid-channel lines, Chichagoff Passage and Zimovia Strait it is reported that *a sunken rock* with ten or twelve feet on it at low water was discovered in November, 1882, by the Rev. S. H. Young, while making a trip in a canoe. There was no kelp on the rock, which must be regarded as a serious danger. There is a small islet with a rock near it on the northern side of the eastern part of Chichagoff Passage, but the island represented on some charts on the southern side of the passage does not exist.

Zimovia Strait.

Young Rock.

Five miles NW. by N. ¾ N. from the northern point of Etolin Island is a point on the Wrangell shore from which *a reef* is represented to project a mile in a S SE. direction.

About two miles NW. from this point lies the entrance of Etolin Harbor, named by the Russians, and formerly occupied by them as a trading-post. The harbor is formed by a small bay about five and a half cables in length NW. ½ W. and SE. ½ E., of which the entrance is about five hundred yards in width, NW. by N. and SE. by S., from headland to headland. The harbor is about four hundred yards in width, but a large proportion of its extent is rendered unavailable by shoal water and an irregularly shaped peninsula which makes out from the NE. shore. The part available for vessels is about two cables in length NW. and SE., and half a cable wide. The depth of water varies from three to eight fathoms, mud, gravel or sand. The southern headland is denominated by the Russians Point Shekesti, and about seventy yards N. from it is *a rock* or *ledge* with two or three fathoms about it. The other points about the harbor without exception have rocks or shoal water extending outward from them. Vessels may anchor in eight or nine fathoms, muddy bottom, midway between the U. S. fort and Point Shekesti. Small vessels may pass to the NE. from the point, but in this portion of the anchorage it will be necessary to moor NW. and SE.

Note lower anchorage

There is now a wharf built, at the end of which about ten feet may be had at low water. There are several rocks in this vicinity. The place, except for small craft, cannot be called a harbor. In southeasters vessels must run around Point Highfield.

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* Upon which, in addition to the foregoing notes, it is stated that the geographical position of Simonoff Islet is

Latitude	56° 33′ N.
Longitude	132° 22′ W.,

while on the Russian plan it is given as

Latitude	56° 34′ 28″ N.
Longitude	132° 23′ 35″ W.

It is singular that both should have erred so much and in the same direction.

† These discrepancies cannot be reconciled without additional observations in the field. An error appears on the Coast Survey sketch of Etolin Harbor as printed, in the accidental substitution of 37′ for 23′ in the longitude of Fort Wrangell.

‡ Named by the Russians on their Hydrographic charts of 1848 and 1853, and called Kach-khanna Island on Tebienkoff's chart of 1849. It should be noted that the names, ostensibly of Indian origin, in some cases inserted by Tebienkoff, are of very doubtful application to the geographical features which they are used to designate, and this as well as their unpronounceability is in most cases a sufficient reason for discarding them, or rather for adopting in preference the more euphonious and previously published civilized appellations.

§ In English, Winter Strait.

The shores about the harbor are densely wooded, except where the wood has been cut off, and tolerably high, the summits within half a mile reaching five or six hundred feet, and one, a mile and a half to the eastward, nearly two thousand feet.

Behind the town is a low ridge between two hills over which Eastern Passage is visible. The soil is of rich, black, vegetable loam over glacial gravel, and interspersed with fragments and boulders of granite. It is usually boggy in its character, and covered with tall grass and herbage. The beaches are mostly gravelly or rocky with patches of sand. At present there is no military establishment here and the fort is devoted to other purposes. There are two churches, over one hundred houses or shanties, and several missionary establishments.

The town is known as Wrangell, and a deputy collector of customs is stationed here. The value of its commerce fluctuates with the mining business and differs considerably in different years. **Wrangell.**

The Russian stockaded post of St. Dionysius,* established by order of Baron Wrangell in 1834, was situated on the small peninsula alluded to, but no longer exists. In 1867 the U. S. military post of Fort Wrangell was erected on the shore near the northern headland of the entrance. A custom-house and several trading establishments, with a large number of native huts or houses, are situated here. This has been the port of clearance for goods destined for British territory by way of the Stikine River, and as such has acquired some importance.† The monthly mail steamers between Washington Territory and Sitka usually touch here.

A plan of the harbor was made by Zarembo, and is to be found on Russian Hydrographic Chart No. 1396, and has been roughly reproduced on U. S. Hydrographic Chart No. 225. A preliminary sketch was made by the U. S. Coast Survey party in 1869, and appears among the supplementary sheets of the Atlas of Harbor Charts of Alaska. The geographical position of Fort Wrangell, according to the observations of the Coast Survey party,‡ is about

Latitude	**56° 28′ 15″ N.**
Longitude	**132° 23′ 23″ W.**

The variation of the needle in 1881 was **29° 17′ E.** according to observations by the U. S. Coast Survey.§ The magnetic dip in 1881 was about **75° 33′.**

The tide in Zimovia Strait floods to the northward with a rate of two and a half knots. The extreme rise and fall in Etolin Harbor is stated to be eighteen feet, the average about fourteen feet.

Woronkoffski Island, which in this vicinity forms the western shore of Zimovia Strait, received its name‖ from Russian explorers, and is situated to the northward of Chichagoff Passage, between Zimovia and Stikine straits. It is about five miles long **N.** and **S.** and two miles wide. Its northern angle, **Woronkoffski Point,** forms the western, as Point Highfield forms the eastern, extreme of the northern entrance of Zimovia Strait, which is here four miles wide.

This point, known as Woronkoffski Point, is low and black, wooded to the water's edge. At low water *a reef* is visible which extends a short distance northward from it. From Etolin anchorage Woronkoffski Point bears **S. 36° W.** From thence the shore on Zimovia Strait trends **E SE.** and then to the southward; on the other hand it trends **S.** by **W.** ½ **W.** into Stikine Strait.

In the middle of the northern shore of Woronkoffski island a small bight occurs, immediately off which, about half a mile from shore, *a sunken rock* exists, which the U. S. steamer *Saranac* is said to have struck; at low water quite a reef shows, but it is out of the channel. ***Saranac Rock.***

Woronkoffski Point forms the northeastern headland of **Stikine Strait,** a name¶ which has been somewhat loosely applied by different geographers. It was originally applied (in the Russian form of Pralif Stakhinski) on the Russian Hydrographic Charts of 1848 to the body of water separating Zarembo

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* It was built by Capt.-Lieut. Dionysius Feodorovich Zarembo.

† Within a few years $75,000 are stated to have been expended here in the construction of buildings and other permanent improvements, and the port has a considerable commerce. Transactions to the amount of several hundred thousand dollars were reported for 1876, and at that time about a million dollars worth of goods and gold-dust passed through the hands of traders and miners in and out of this port of entry annually.

‡ Erroneously given on the chart as longitude 132° 37′ approximate, &c. The longitude above given agrees tolerably well with the results of English, Russian and American naval observers, but who also agree among themselves in the error of making the latitude about three miles more northerly.

§ The magnetic station of the Survey in 1869 is now the middle of the principal street and useless for observations. That of 1881, therefore, was selected elsewhere, and a position in the Catholic church-yard was decided on. This is about 200 feet N. 27° E. from the old station, and is directly in front of the middle of the church and about seventy-five feet from it; about fifteen feet from the plank walk and about twenty feet from the front and west fences. The station was marked by a 10 x 10-inch post about three feet high, inscribed "U. S. Coast Survey, 1881."

‖ Sometimes written **Voronkowsky.** Named for Lieut. Woronkoffski of the Russian Navy, 1836.

¶ The name has, as in the case of the Stikine River, been variously spelled, but the orthography here adopted has been in more general use than any other, and is therefore preferred to any attempt to restore the phonetic value of the native word. It is the **Stachinski Strait** of British Admiralty Chart 2431 and U. S. Hydrographic Office Chart No. 225.

Island from Woronkoffski and Etolin islands. By other authorities it has been used to denominate part of Sumner Strait, and extended to various adjacent waters. The original limitations are here adopted.

The **NW.** headland of Stikine Strait is **Point Craig**, named by Vancouver. On the British Admiralty Chart No. 2431 and U. S. Hydrographic Office Chart No. 225 the name has been erroneously transferred to a point farther west.

There is nothing particularly marked about this point, which forms the northeastern extreme of Zarembo Island and is a broad projection with several angles. It is steep, thickly wooded, with *a rocky ledge* extending north and east from its end less than a cable. West from Point Craig the shore trends to the southward and westward, and there are two wooded islets and several rocks lying close in-shore. Eastward from Point Craig the shore trends about **E.** by **S.** for a mile or two, then turns to the southward, forming the western side of Stikine Strait. It is probable that the northern ends of both Zarembo and Woronkoffski islands are several miles farther south than the charts indicate. To the eastward of Point Craig the shore is broken into several small islands, of which the southern one is in line with the **NW.** point of Woronkoffski Island and with the high hill back of the old fort at Wrangell bearing **NE.** and **SW.**

From this **South Craig Island** the land trends away **S SW.**, forming quite a large bight or bay. The eastern shore of Stikine Strait is broken by **Chichagoff Passage**,* which connects with Zimovia Strait, and is the usual passage for steamers bound to Wrangell. On the northern point of entrance is a small islet, not visible from the southward. To the southward of the passage is a bare red-topped mountain, visible from Clarence Strait. Chichagoff Passage can always be recognized as the only break in the land **E.** of **N.** in Stikine Strait through which the Stikine Mountains are visible. Opposite to the entrance to the passage Zarembo Island is traversed by a valley which apparently extends clear across it, and the shore again trends **SE.**

The eastern shore of Stikine Strait from the vicinity of Red Mountain trends to the southward and eastward, forming a bight off which is an islet. In the southern part of this bight is a small cove, affording anchorage for one small vessel. It is called Quiet Harbor.† It is a small indentation facing to the northward and penetrating the shore about a mile. No soundings are given, nor is there any information accessible in relation to this locality.‡

Quiet Harbor.

On the south side of the southern entrance to Stikine Strait a small island, close in-shore, forms the southeastern point of entrance, while the corresponding headland to the westward is Point Nesbitt. Stikine Strait has a clear passage and varies from one to three or four miles in width.

THE PRINCE OF WALES AND ASSOCIATED ISLANDS.

Having reviewed the interior navigation from Dixon Entrance to Sumner Strait, the oceanic coast is next in order.

THE COAST FROM CAPE MUZON NORTHWARD.

Immediately to the westward of Cape Muzon the coast-line is marked by a large bight, Liscome Bay§ which enters the shore in a northerly direction with a number of thickly wooded rocky islands masking its entrance.

The coast is rocky with no prominent landmarks. From Point Cornwallis the western headlaud of this bay the coast trends in a westerly direction some six to seven miles to **Point Bazan**, the southeastern headland of the port of the same name. The point is low at its extremity, with rocks extending off it a quarter of a mile. The position of the point, according to observations by Zarembo, is

Latitude ..... **54° 48′ N.**
Longitude ..... **132° 54′ W.**

Hence across the entrance of Port Bazan§ is about five miles in a **W NW.** direction; the port penetrates the shore some six or eight miles in a **NE.** by **E.** direction with an average width of three miles. The **NW.** headland is not named. The shores are rather irregular, indented with a number of small bays or coves, and the port is longitudinally divided for more than half its length by **Dolgoi Island**, a high, wooded, very narrow and rather irregularly shaped island. The seaward extreme of this island is a well marked and peculiar landmark of a whitish color and easily distinguished at a long distance.

Port Bazan.

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* It is the **Tchitchakoff Strait** of British Admiralty Chart 2431. (See page 92.)

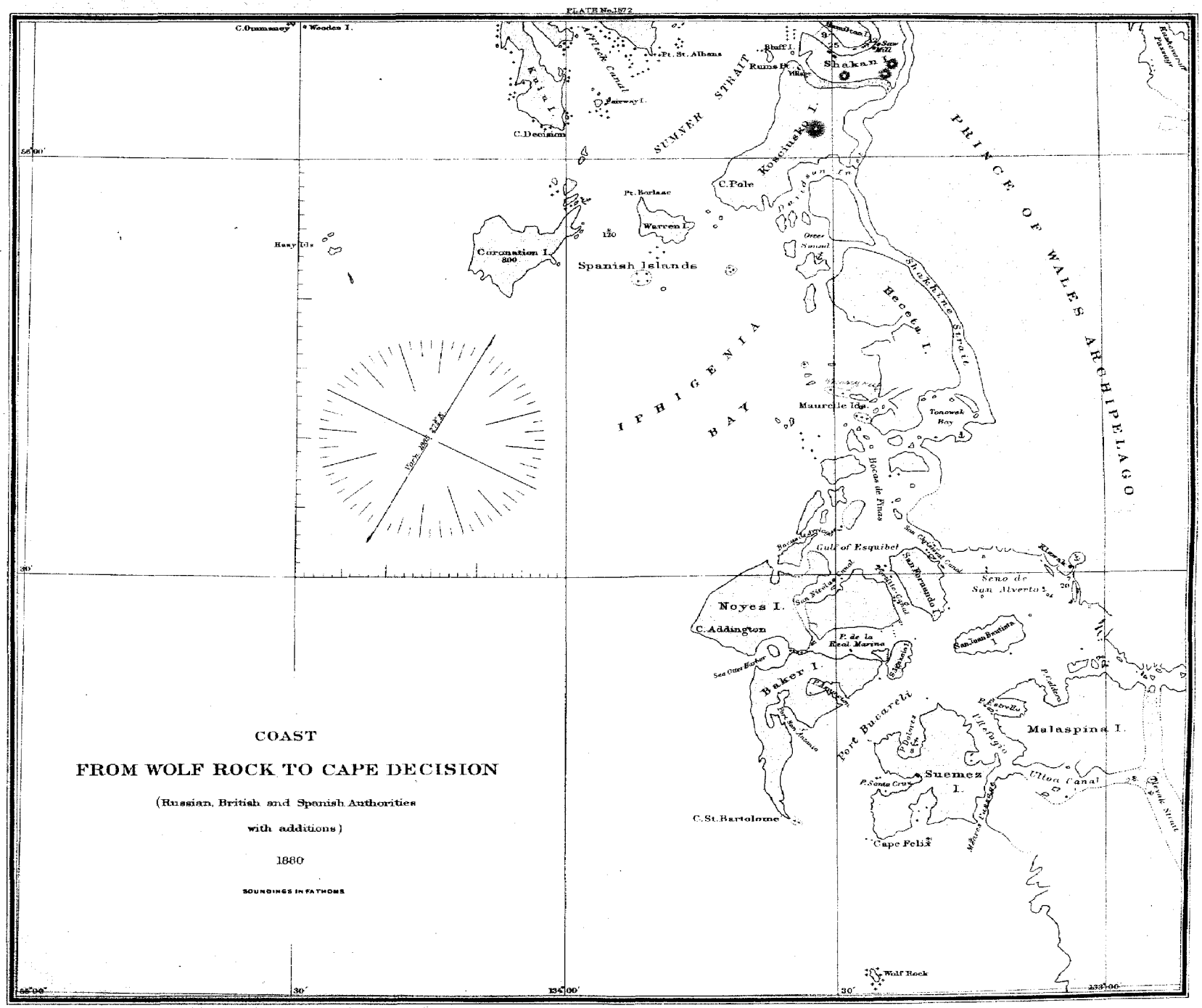
† In Russian **Pokŏinaia**, sometimes called **Quiet Bay** and **Pokoinay Harbor** of British Admiralty Chart 2431.

‡ There is no doubt that this group of islands as a whole stands much in need of careful examination, especially towards the northern part. The information here afforded is (and for the present must be) largely of a merely approximate character.

§ Ingraham names **Port Liscome** a bay in this vicinity, but whether this one or Port Bazan was intended the map is too imperfect to decide. At all events the name may be preserved as above.

‖ Also called **Bazan Bay** or **Harbor**. It was named **Puerto del Bayllo Bazan** by Caamano, after the Bayllo Bazan who examined it in July, 1792. It is possibly, **Port Liscome**, of Ingraham in 1792.

PLATE No.1572



COAST

FROM WOLF ROCK TO CAPE DECISION

(Russian, British and Spanish Authorities

with additions)

1880

SOUNDINGS IN FATHOMS

Between the northern end of Dolgoi Island and the head of the bay are a great number of small, high, wooded islets. The only portion of the port which seems to have received any particular attention is that lying between Dolgoi Island and Point Bazan. Here *foul ground* is indicated on both shores, extending off to a quarter of a mile. Before entering the channel between the island and the **SE.** shore twenty-three fathoms are had, afterwards twelve to sixteen in mid-channel until the northern end of the island is reached. Seven and nine fathoms are here reported, and half a mile beyond, in a snug cove on the main shore, about **E NE.** from the end of the island, anchorage is had in seventeen and a half fathoms. Navigation to the **N.** and **W.** of Dolgoi Island is not recommended, as nothing is known of the depth of water and it is probable that concealed dangers exist. No directions are necessary for reaching the usual anchorage further than to keep in mid-channel.

A sketch (by Zarembo) of the port is given by Tebienkoff, (Chart IX,) from which it is gathered that the rise and fall of tide is fourteen feet.

The variation of the compass at the time of the survey (about 1834) was **26° E.** The geographical position of the anchorage is

Latitude ..... **54° 50′.5 N.**
Longitude ..... **132° 47′.2 W.**

This plan is copied in the U. S. Coast Survey Atlas of Harbor Charts of Alaska. It is stated by some of the Russian American Company's officers that a heavy swell rolls into this bay in **SW.** gales. The western point of entrance to Port Bazan is easily recognized by its high white bluffs and by a small island southward from the point close in-shore. It is uncertain whether the high, bold, western headland of this bay or Cape Muzon was the **Cape Santa Maria Magdalena**, named by Perez in 1774, but the name of Cape Magdalena will be retained for the former.

About six miles northwestward from Cape Magdalena lies a remarkable headland making out to the **S SW.**, and probably **Cape Saint Augustine** of Maurelle.* It consists of a high round mountain, sloping abruptly to a small nipple hill, which is separated from a low pyramidal knoll, at the extreme end of the point, by a low strip of sand. The entire point has a white bluff water-line. This headland forms the southeastern extreme of **Augustine Bay**, an apparently deep but unexplored bight containing some islands and extending in a northerly direction.

From the entrance of the port the coast trends to the **NW.** about eighteen miles. This part of the coast-line is little known; but such data as are accessible indicate that it is much indented and broken, backed by mountains of considerable height, and with bold and densely wooded shores, which are rather thickly populated with Indians of the T'linkit stock.

SW. by **W.** ½ **W.** from Point Bazan, nineteen miles, lies the southern end of **Forrester Island**, named by Dixon† in July, 1787.

This island all authorities agree in representing as about a mile and a half wide and four or five miles long **NW.** by **N.** and **SE.** by **S.**, with some rocks about its southern end, where there are two islets, the southern one the smaller. The **NE.** extreme of Forrester Island is terminated by a peculiar pinnacle boulder conspicuous from quite a distance. From the northern end rocks extend to several small low islets, mentioned by several navigators, in the same general trend as the island for a distance of a mile or more. The island is steep at the sides, rising into high rounded knobs, densely wooded, and occupied during at least a part of the year by Indians from the adjacent shores.

From some points of view the tops of these knobs, which diminish in height northwardly, appear notched or serrated. From the **SW.** Forrester Island presents a high, round, central knob, rising to fifteen hundred or two thousand feet. From this the eastern slope is gradual, but breaks away and rises again, forming a knob. The western slope is somewhat similar, but the terminal knob is higher and there are a couple of hills between it and the central ridge. The shores appear steep-to all round. The geographical position of the southeastern extremity of Forrester Island is, approximately,

Latitude ..... **54° 48′ N.**
Longitude ..... **133° 30′ W.,**

but there is a doubt as to the longitude, authorities differing from **133° 29′** to **133° 35′ W.**‡ The island is visible from Port Refugio through the passage leading to the sea eastward from Suemez Island.

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* Somewhere on this shore, between Port Bazan and Port Bucareli, a cape or promontory, or a high mountain which at a distance would appear as such, was seen by La Perouse and identified by him with the **Cabo de S. Agustin** of Maurelle in 1775. He gives a view of it, but the charts of this vicinity are still so imperfect that it cannot be definitely located. Maurelle states that from the vicinity of Wolf Rock they saw this cape at a distance of four or five leagues, "after which the coast (southward) trended to the **E.** so much that we lost sight of it. * * * This Cape St. Agustin is in nearly **55° N.** latitude." This was doubtless the above-mentioned promontory.

† About a year afterwards Douglas called it **Douglas Island**, and eleven years later (November, 1798) the name of **San Carlos Island**, given by Maurelle in 1775 and published in 1781 in Barrington's Miscellanies, was first placed upon a chart in the atlas of the voyage of La Perouse.

‡ The U. S. Hydrographic Chart No. 225 puts the southern end in latitude **54° 45′ N.**, but no authority for the change is given.

Tebienkoff, Dixon and Meares give views of this island,* none of which are satisfactory.

Northward from Forrester Island about two miles, according to Nichols, is **Lowrie Island,**† a small detached island, near which are two exposed rocks. Most authorities place this island nearer to Forrester Island.

Wolf Rock. **N.** by **W.** ½ **W.** about nine miles from the northern point of Forrester Island, according to Russian authorities, lies Wolf Rock of Vancouver,‡ low and black.

Vancouver and others agree in representing it as a low, flat, rocky, barren islet, nearly level with the water, and surrounded by rocks and breakers, which extend some distance off. Its exact extent has not been recorded, but would appear to be less than a mile. According to Vancouver this rock is **S. 21° E.** (true) fourteen miles from Cape St. Bartolomé, twelve miles from the nearest shore, and nine miles from Forrester Island. The channel between this rock and the islets at the **N.** end of Forrester Island appears to be clear and deep. Douglas found no bottom with fifty fathoms of line when passing through it. Maurelle anchored in twenty-two fathoms near the foul ground about the rock.

In foggy weather or darkness it seems evident that this rock constitutes a serious danger for vessels sailing between Dixon Entrance and the coast northward.

NW. ½ **W.**, twelve or fourteen miles from Wolf Rock, is situated **Cape Bartolomé.**§ This cape is a long, high and narrow tongue of wooded land, which, for eight miles from its extremity, does not attain a width greatly exceeding a mile. At a distance of three miles from its southern extreme it attains a height of 1,500 feet by a gradual rise in successive wave-like summits. The island of which it is the southern extreme has received from the superintendent of the U. S. Coast Survey the name of **Baker Island.**‖

The general trend of the cape is about **NW.** and **SE.**, and foul ground extends in the latter direction from its southeast end a distance of a mile or more. Northward from these rocks the water is bold, reaching a depth of fifty fathoms within a mile of the shore. The termination of this cape was placed by Vancouver in latitude **55° 12′.5 N.**, with which Tebienkoff nearly agrees, but the longitude assigned to it on modern charts varies from **133° 32′** to **133° 38′ W.**

Five or six miles eastward from Cape Bartolomé is **Cape Felix**, the Cabo de San Feliz of the Spaniards and of most Russian charts. It is a rather short, apparently bluff, wooded promontory, with an islet near it according to the earlier Spanish charts. Eastward from it, guarding a series of indentations, a number of rocks, islets, reefs or banks are indicated within a distance of six or eight miles, and extending as much as two miles in some cases from the nearest shore.

Dangers.

Cape Felix is situated upon **Suemez Island,** named by the Spaniards. According to Tebienkoff, it principally consists of high and wooded land, and is of an irregularly cruciform shape, caused by its indentation **NE., SE., SW.** and **NW.** by small ports or bays. It is one of the largest of an undetermined number of islands which, in combination with the main body of Prince of Wales Archipelago, unite to protect the great body of water known as

PORT BUCARELI.

This is the Puerto del Baylio Bucareli¶ of Maurelle and Quadra, which has in modern books and charts been variously termed Bucareli Bay or Sound, &c.

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* For that here given we are indebted to Capt. L. N. Herendeen.

† After Captain Lowrie, of the snow *Captain Cook*, in 1786, who was perhaps the first English-speaking navigator to visit Queen Charlotte Islands and possibly the first who saw this island.

‡ The Forrester Island of Meares but not of Dixon, and called **Isla Rasa** or **Flat Island** by the Spanish navigators. Wolf Rock and Forrester Island were called by La Perouse the **San Carlos Islands.**

§ The **Cabo de San Bartolomé** of Maurelle and Vancouver, a name for which **Point Chirikoff** is substituted on one old Russian chart, and on Lisiansky's chart **Cape Cheerikoff** appears together with the Spanish name. It seems probable that this may also be **Cape Adamson** of Meares.

‖ After Mr. Marcus Baker, of the Coast Survey, engaged 1873–1881 in surveys and office work relating to Alaska.

¶ Named in honor of the Baylío (Baillie) Don **Antonio Maria Bucareli y Ursua**, Viceroy of Mexico. Authorities differ in regard to the orthography,—the earlier ones spelling the name with a single "l."

This port was discovered by Don Bruno Heceta of the *Santiago* and Don Juan de la Bodega y Quadra of the *Felicidad* on August 24, 1775, and a sketch was made of it, probably by Maurelle. It was next examined by the Spanish expedition under the command of Don Ignacio Arteaga of the *Princesa* and Quadra of the *Favorita*, who anchored here May 4, 1779, and remained until July 1, during which time Don Francisco Maurelle made a detailed survey of the port. It was lastly still further surveyed by Don Jacinto Caamaño of the *Aranzazu*, who was engaged upon the survey from June 12 to July 11, 1792. These are the only surveys that have ever been made of this locality. So far as the compiler has been able to discover, *none* of these surveys were ever published by the Spanish or Mexican governments.

Maurelle's surveys in 1775 and 1779 were confined to the western and central portions of the port. The map resulting from these reconnaissance surveys was published by La Perouse in his Atlas (No. 26) in 1798. This was reproduced by the Russians at some unknown date, (perhaps 1802,) and this Russian plan reproduced in the U. S. Coast Survey Atlas of Harbor Charts No. 1, with such additions from Caamaño's survey of the eastern part as could be gleaned from Vancouver's general map No. 7. The plan in Tebienkoff's Atlas does not include the eastern part of the port.

With the work of the Spaniards, investigation of this vicinity seems to have been practically closed, and no new information of importance in regard to Port Bucareli has been made public for many years. Certain discrepancies appear between Tebienkoff's chart and those of the Spaniards, but there are no data among his hydrographic notes to indicate that these changes are due to new information rather than to conjecture or the idiosyncracies of the draughtsman, such as appear in many portions of his Atlas.

The well-known carelessness of the early Spanish explorers renders the unreserved acceptance of their work extremely hazardous. For this reason the principal features only of this important sheet of water will here be referred to, and more detailed descriptions deferred until the reception of new data shall render them trustworthy.

From the central portion of Port Bucareli a circle described with a twelve-mile radius will include the greater portion of its extent. So far as known its general hydrographic features are as follows:

The principal and southwestern entrance of the port is found between Capes Bartolomé and Felix, and consists of a sheet of water three or four miles in width, trending about **N NW.** for six or eight miles, when its general course is to the **N NE.**, gradually widening to its termination—some eighteen miles from the bend—where its width is about ten miles. Nearly in the center of the port is the large island of **San Juan Bautista,**—trending about **NE.** and **SW.**, with a width of two and a length of about five miles.

The eastern side of the above entrance is formed by Suemez Island, to the eastward of which is **Meares Passage,** but slightly known, and indicated by Tebienkoff as very narrow and with several dangers in its approaches.* The main body of water gives off branches to the eastward and to the westward, some of which communicate with the sea and others form snug and land-locked harbors, Several unexplored channels and passages exist, especially the **Canal Ylas de Ulloa,** or Ulloa Canal. which is supposed to extend to one of the branches of Tlevak Strait from a point near the junction of Meares Passage and the eastern end of Port Refugio. The land eastward from Meares Passage and forming the western part of the south shores of the Ulloa Canal is believed to be separated from Dall Island by a passage extending from Ulloa Canal to the Pacific. The large mass of land indented on the northward by Ports Estrella and Caldera, and embraced by the waters of Port Refugio, Ulloa Canal, Tlevak Strait and Bucareli, has been named by the U. S. Coast Survey **Malaspina Island,** in honor of that distinguished and unhappy navigator. It may eventually prove to consist of several islands.

Ulloa Canal appears to have derived its name from being supposed to communicate with Cordova Bay, the land north of Cordova Bay being styled Isla Ulloa in Galiano's Atlas. Another important passage is Shakhine Strait, extending northward from the **N NW.** portion of Bucareli.

According to the old MS. Spanish chart, first published by La Perouse, the first entrance within, northward from Cape Felix, is Puerto de la Santa Cruz, with *a reef,* in the middle of the entrance, named *La labandera,* and sixteen to twenty-four fathoms water inside, the northern and eastern shores clear and bold. Here Maurelle anchored in May, 1779. **Puerto de la Santa Cruz.**

TIDES.

According to their observations it is **H. W. F.** and **C.** at $12^h\ 15^m$ p. m. The rise of the highest tides is seventeen feet three inches, and of the neap tides fourteen feet three inches. The tides of the night exceed in height those of the day by one foot nine inches.

Separated by a rather narrow peninsula to the northward of this harbor lies Puerto de los Dolores, open to the northward, and the usual stopping-place of the Russian traders in modern times. This bay is about a mile wide and two miles deep, with eight or nine fathoms water. Its eastern shore is bold, but the southern and western are bordered by foul ground, and *two patches of sunken rock* are indicated by Tebienkoff, one in the middle of the port, another near the head. The anchorage is between them in eight or nine fathoms. **Puerto de los Dolores.**

Beyond this, to the eastward of Suemez Island, lie the Puertos **del Refugio, de la Estrella, de la Caldera,** etc., extending to the **NE.** angle of Port Bucareli, whence, and also from the entire northern shore of which, extend numerous unsurveyed openings.

In this vicinity Tlevak Strait enters Port Bucareli, but the surveys hitherto made are not sufficient to enable their connection and relations to be more particularly stated.

On the other hand, from Cape Bartolomé northward we have extending to the westward Puerto de San Antonio, a double-headed harbor, having twelve to twenty fathoms within and a bunch of rocks and islets near its **NE.** headland, beyond which is the **Puerto de nostra Señora de la Asumcion,** affording a small land-locked harbor, but with deeper water and *several submerged dangers.* **Puerto de San Antonio.**

Beyond this, to the northward, is the Puerto de la Real Marina, with numerous rocks and islands at its eastern entrance, and to the westward extending in a narrow unsurveyed arm, which is connected with the ocean in a southwesterly direction. This arm contains deep water but also *numerous rocks.* It is not considered advisable to attempt its navigation.† **Puerto de la Real Marina.**

* **Sea Otter Bay** of Lisiansky, (after Meares?) Ingraham and other early traders.

† This arm may be identical with **Otter Sound** or **Sea Otter** Harbor of Meares.

The portion of the port to the **N NW.** of Bautista Island was called **Seno de San Alverto.** In its northern part, about latitude **54° 30′**, is situated the landlocked harbor and settlement of **Klawak.** No survey of this has been made and even its exact position is unknown, but it is stated to be a small nearly circular bay, large enough for but one or two vessels, with a very narrow but clear passage in, on emerging from which the navigator is completely landlocked and surrounded by a beautifully-wooded amphitheater of moderately high hills. There is a white settlement here, a fur-trading station and fishery which puts up a large amount of salmon annually. A missionary post or station is projected here.

West of the Seno de San Alverto, on either side of the large island of San Fernando, to the north the **Canal de San Christoval**, and to the south the **Canal de Portillo**, lead to the **Gulf of Esquibel**, a large body of water to which Tebienkoff erroneously applies the name of Boca Fina, and from which numerous passages between islands afford communication with the ocean.

The southernmost of these is the **Canal de San Nicolas**; the next to the north and west is the **Bocas de Arriaga**, its northern boundary formed by numerous low rocky islands. The northern extremity of the gulf, showing many small openings between islands and points of the main shore, received from the Spaniards the name of **Bocas de Finas.** Both of the last-mentioned two Spanish names are misapplied by Tebienkoff. From the northern portion of the Bocas de Finas extends the **Shakhine Strait** or **Passage,*** probably rejoining the sea at a considerable distance, but not fully explored.

On the main shore, near its southern entrance, is a small bay containing an anchorage, and indicated without details on Russian Charts as **Tonowek Bay.** Westward from this, according to Tebienkoff, there appears to be another anchorage somewhere in the maze of islets and rocks.

The defects of, and descrepancies between, all charts of this region are so great that the geographical features can only be alluded to in the briefest manner, as above, without attempting bearings, dimensions or distances.†

It has already been mentioned that there are reasons for regarding Cape Bartolomé as Cape Adamson of Meares. Fifteen miles **NW.** by **W.** ½ **W.** from Cape Bartolomé lies **Cape Addington** of Vancouver, which if the above supposition be correct, is the Cape Barnett of Meares. While Meares'‡ statements in regard to these two capes and his adjacent Sea Otter Harbor will apply in part only to *any* portion of the shore in this region as now represented on the charts, there are, perhaps, good grounds for identifying them as above.§

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* This is indicated as **Sachine Strait** on British Admiralty Chart No. 2431, and elsewhere as **Schakhin Strait.**

†It is noticeable on the Spanish chart that the **Canal de Portillo, SW.** from San Fernando Island, is given as tolerably clear and with six or eight fathoms near the shores, while the **Canal de San Christoval** is represented as nearly choked up with rocks and islets. On the Russian charts, however, the track indicated for the Russian trading vessels passes through the Canal de San Christoval, although the other route from Port Dolores toward Tonowek Bay is somewhat shorter. This is not positive evidence, however, that the northern passage is preferable for navigation, as the routes of fur traders are more frequently determined by the location of native settlements than by any other considerations.

‡As the responsible author of the publication Meares is here referred to, while the actual observations in many cases were made by his subordinate, Douglas.

§Meares' latitudes, from some cause, are nearly all too far north, varying in known cases from six to ten miles in this respect. His longitudes are only accidentally near the truth. However, if his published positions be laid off on the chart it will be observed that these capes bear the same relation to each other as do Capes Bartolomé and Addington, both in distance and direction from each other, but are some fourteen miles too far north. Meares' own differences of longitude are likely to be approximately correct, even if the actual longitudes were erroneous. He placed the capes fifteen miles apart, exactly the distance between Capes Bartolomé and Addington. Meares' estimated distances, when large, are usually exaggerated, and he may never have seen the low southern termination of Cape Bartolomé, but only its high and somewhat more northern portion. But it is not likely that he would make such an error as to place his capes only fifteen miles apart when they were really thirty, as must have been the case if the west part of Coronation Island were his Cape Barnett, as has been held by some reputable authorities. Again, he obtained bearings on Cape Barnett when within seven or eight miles of Forrester Island. The height of Coronation Island having been determined approximately by the U. S. Coast Survey in 1869 at eight hundred feet, it would of course have been invisible to Meares at a distance of nearly sixty miles. Moreover, the bay and narrow passage between Capes Bartolomé and Addington, with the arms of Port Bucareli to the eastward from the narrow strait, fulfill all the conditions of Meares' Sea Otter Harbor or Sound.

The principal objections are that he makes his southern cape "high, bluff land," and the northern one "low towards the sea," while "it rises gradually to a considerable height," when most of the published information accessible tends to show that exactly the reverse is the case. Doubts are thrown upon this, however, by oral testimony of navigators who have recently visited Port Bucareli. This difficulty and some of his bearings may be better reconciled upon the reception of more information. Others of his bearings are clearly erroneous or erroneously printed. His "view" of Otter Sound appears valueless as well as his estimated position for it. On the other hand, the early fur traders (who may be supposed to have had some definite knowledge of Meares' discoveries from oral communication, &c., during the six or eight years subsequent to his visit) located Meares' Sea Otter Harbor in Bucareli Bay, and apparently in that entrance of it east of Suemez Island called by the Coast Survey Meares Passage. It is so located on the maps of both Ingraham and Lisianski. If the southern cape (Barnett) was Cape Augustine and the northern one (Adamson) Cape Bartolomé, (or Cape Felix,) the conditions required by Meares' description would be pretty well satisfied. But it is in most cases impossible at present to come to an absolutely satisfactory decision in regard to the exact locality of his names or of the geographical features he endeavors to describe.

Cape Addington is described by Vancouver as a "conspicuous promontory;" his observations, however, were made at a distance of several leagues from the land, so that low land near its base might have remained unobserved. From it the shore trends **E. ¾ N.** about five miles to an opening in the land which forms a rounded port containing a central island, and which connects by a very narrow passage with one of the arms of Port Bucareli.

In this passage, as is above-mentioned, **Otter Sound**, or Sea Otter Harbor * of Meares, may have been situated.

The eastern shore of the bight leading to the above passage, and formed by the western portion of **Noyes Island**,† on which Cape Bartolomé is situated, is represented in one of La Perouse's views‡ as high; about equal in that respect to the land at Cape Addington.

From Cape Addington the coast curves to the northward and afterward to the north-northwestward,—being composed of the western edges of the numerous islands which guard Port Bucareli from the sea. It is of course much broken and is but little known.

The northern termination of this curve is formed by **Cape Pole**, which bears from Cape Addington **NW. by N. ¾ N.** thirty-two miles. This cape, named by Vancouver, and termed by him a "conspicuous point," forms the **SE.** point of entrance to Sumner Strait. In the middle and most eastern portion of the bight formed between Capes Pole and Addington, called by the U. S. Coast Survey Iphigenia Bay, after Meares' vessel, are numerous rocks and islets to seaward of the main line of islands.§ The westernmost of the off-shore islets or rocks, according to the best accessible information, bear from Cape Addington about **N. ½ W.** sixteen, nineteen and a half and twenty and a half miles, respectively; the most northern is also slightly more westerly than the others. **E. by S. ½ S.** and generally to the eastward and southward, from the outer rocks, are numerous others, extending to the main line of islands, to which the name **Maurelle Islands** has been applied.

E SE. from Cape Pole, and extending five or six miles in that direction, is a bight, at the mouth of Davidson Inlet; this bight is supposed to receive the northern termination of the so-called Shakhine Strait. To this bight, as before mentioned, the name of Otter Sound or Sea Otter Sound has been applied, under the supposition that it was the Otter Sound of Meares. Whether this supposition be correct or not, there seems to be no reason why the name should not be adopted and retained for this locality. **Otter Sound.**

The large body of land embraced between Shakhine Strait, Otter Sound, Iphigenia and Tonowek bays has received from the U. S. Coast Survey the name of **Heceta Island**, or islands. It is not certain of how many bodies of land it is composed.

Southwest from Cape Pole, and extending in this general direction for some sixteen miles, are the **Spanish Islands**, named by La Perouse, and consisting, as restricted, of Warren and Coronation islands and adjacent islets and rocks. According to Vancouver the easternmost of these, separated by a strait about two miles wide from Cape Pole, is **Warren Island**, named by Vancouver and described by him as a "high island" with rocky shores, about four miles long, with an average width of less than two miles, and having a generally **E.** and **W.** trend. In the eastern part of the short strait which separates it from Cape Pole three islets are indicated by Vancouver rather nearer the cape than the island; and he mentions that in this passage "some lurking rocks were observed."‖ He also remarks: "to the southward of this island are three clusters of *very dangerous rocks*, the first lying from its northwest point **S. 15° E.** (true) at the distance of three miles and a half; the second **S.** (true) distant six miles, and a small islet lying from them southeast (true) at the distance of about half a league. The third cluster lies off the southeast point of the island * * * in a direction **S. 30° E.** (true) about four miles distant." The last patch is omitted on his chart, and the distinctive features of these ledges seem to have been lost sight of on the Russian hydrographic charts, which have been followed in regard to this locality by other modern charts. ***Dangerous Rocks.***

The western point of Warren Island, which has some rocks about it, was named by Vancouver **Point Borlase**, and placed by him in latitude **55° 57′.7 N.**

According to the same authority the passage between Warren Island and Coronation Island is five miles in width and "by far the most spacious and fair to navigate. * * * Nearly in mid-channel between the islands bottom could not be gained with 120 fathoms of line."¶

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*In Part I, Alaska Coast Pilot, 1839, issued by the U. S. Coast Survey, it is suggested that Otter Sound was located near the northern termination of Shakhine Strait; but in view of the difficulties in the way of identifying Cape Barnett with Coronation Island, as above stated, and the reception of more recent information from the locality, this suggestion seems improbable.

†Named by the superintendent of the U. S. Coast Survey in 1879, after Mr. W. M. Noyes, of the Coast Survey party employed in Alaska, 1873–80.

‡And on a late MS. view by Captain L. N. Herendeen.

§To this part of the bay Tebienkoff has erroneously transferred the name of Bocas de Arriaga, applied by the Spaniards to one of the passages leading between the islands eastward.

‖Vancouver, vol. ii, p. 424.

¶Vancouver, vol. ii, p. 424.

Coronation Island, the largest of the group, was named by Vancouver from that anniversary falling on the day he passed it. It lies five miles westward from Warren Island and about the same distance southward from Cape Decision. It is about eight miles long and averages about three miles wide, trending NE. by N. and SW. by S. in a general way. The island reaches a height of eight hundred feet according to notes by the U. S. Coast Survey party of 1869. Its form is very differently represented on different charts. On Russian Hydrographic Chart No. 1493 the middle latitude of the island is about 55° 53′.5 N. and the longitude of the middle peak is about 134° 10′ W., while Tebienkoff gives 55° 55.′5 N. and 134° 05′ W. for the same portion of the island. Vancouver's latitude is nearly midway between these.

Coronation Island.

From the NE. extremity of the island a chain of islets extends northward in the direction of Cape Decision. Between the point and the first island northward from it Tebienkoff, without details, indicates an anchorage. According to Russian Hydrographic Chart No. 1493, at a distance of two miles from the point a break occurs in the chain, forming a navigable passage between the above-mentioned and two more northern islets. The latter are small, but reach a height of four hundred feet according to U. S. Coast Survey observers. Between them and Cape Decision is the navigable passage, first explored and recommended by Vancouver, who considered it clear of dangers and affording a means of avoiding a very considerable circuit. There is an abundance of water and the channel is a mile and a half wide. The bight between Coronation Island and Cape Addington has received from the U. S. Coast Survey the name of **Iphigenia Bay.**

By Tebienkoff the southern passage is ignored and the islets are differently disposed.

W SW. from Coronation Island eight or nine miles are the **Hazy Islands**, named by the early traders.* They appear, from the views of La Perouse and the remarks of navigators, to be small and pointed,—not attaining any considerable height. They are represented by different charts as from two to eight in number, forming a cluster two or three miles in extent, eight miles from Coronation Island, sixteen from Cape Decision and fifteen from Cape Ommaney. Most authorities place them in about latitude 55° 55′ N. and about SE. ¾ S. from Cape Ommaney.

Hazy Islands.

According to the Coast Survey observers there are three principal islands. The largest lies to the southeast; northwestward from it are two smaller ones, each having two small peaks. Southeast from the group, about two miles from the largest, Hazy Island is a fourth, a long low rock. The highest of the four is said to be about two hundred and fifty feet high. From these islands in clear weather the Nipple peak at Shakan can be seen bearing about NE.; and a little to the northward from it the peak of Mount Calder can be distinguished.

NE. by N. sixteen miles from them, and eleven miles to the westward of Cape Pole, lies **Cape Decision** of Vancouver,† a very conspicuous promontory, formed by the southern extreme of Kuiu Island, placed by Vancouver in latitude 56° 02′ N., and forming the NW. headland of Sumner Strait.

SUMNER STRAIT.

This was named by Dall in 1875,‡ and has been known as a part of Clarence Strait, though having few hydrographic relations in common with the main body of the latter, or Clarence Strait as herein restricted.

The other headland is formed by Cape Pole, and the two bear reciprocally W. ½ S. and E. ½ N., about eleven miles from each other. From mid-channel between these two headlands the course of Sumner Strait for nearly twenty-five miles is N. ½ W.,—the western shore being formed by Kuiu Island and the eastern by land belonging to the Prince of Wales group. Hence the general course, exclusive of merely subordinate curves, is NE. to the banks and islands at the Stikine mouth, forty miles. The first stretch averages seven miles in width. Between Prince of Wales and Kupreanoff islands it widens—from five miles at the SW. to nine miles at the NE. Thence to the Stikine delta the width varies from three and a half miles to seven miles between the Mitkoff group on the northwest and the York Islands on the southeast.

The strait receives from the northwest Affleck and Duncan canals, Keku and Wrangell straits, and communicates over the bars and sand-banks of the Stikine delta with Dry Strait. From the southeast Clarence, Stikine and Zimovia straits and Eastern Passage are received. In general, a broad and sufficient channel, of great depth, extends throughout Sumner Strait, yet there are numerous rocks and other known dangers, which, with the probability that others may exist, renders circumspection in its navigation absolutely necessary.

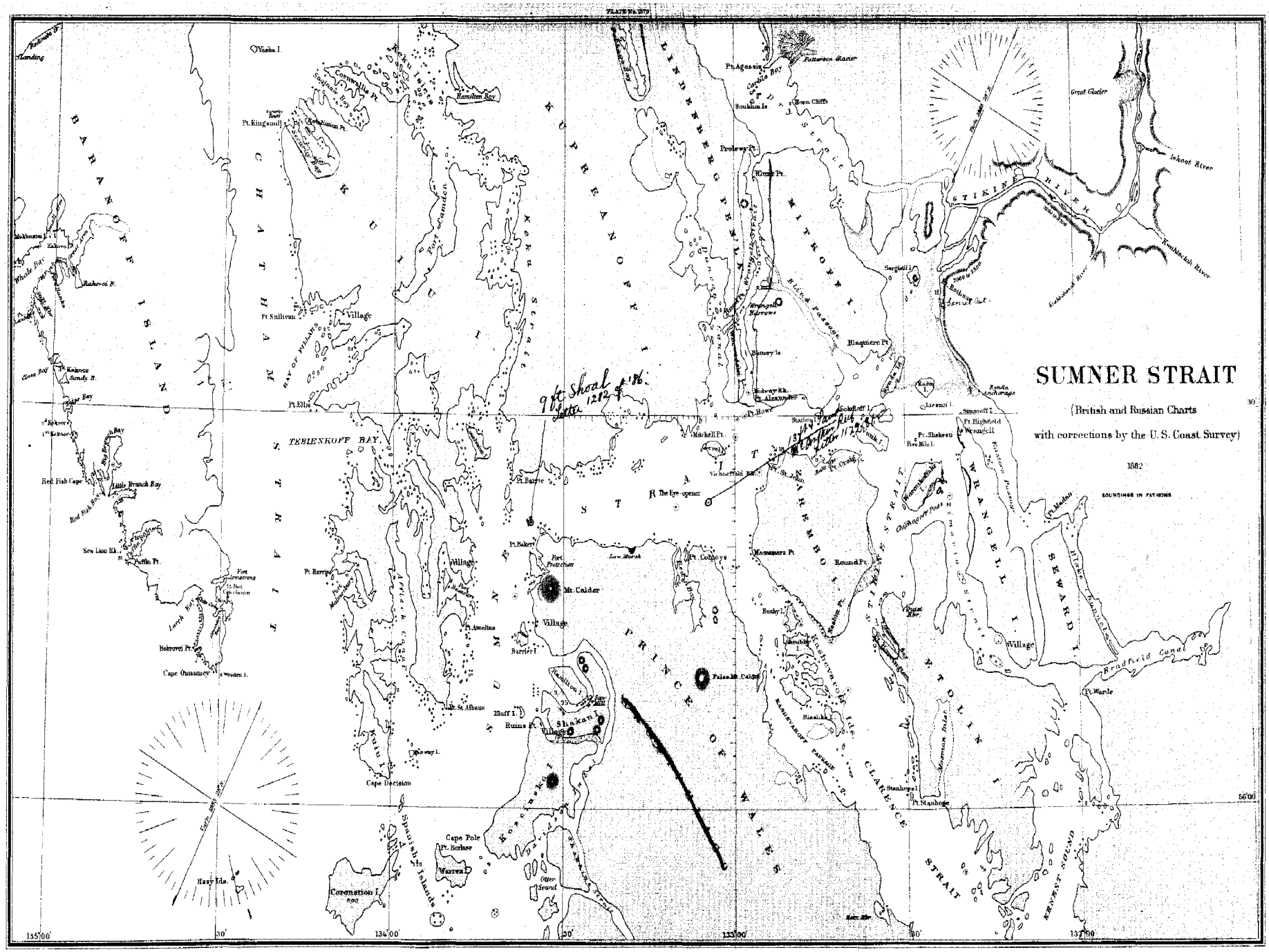
From Cape Pole the shore trends in a northerly direction free of obstructions ten miles to a point, off which is Bluff Island, small, about a mile from the shore, with a passage on either side of it.

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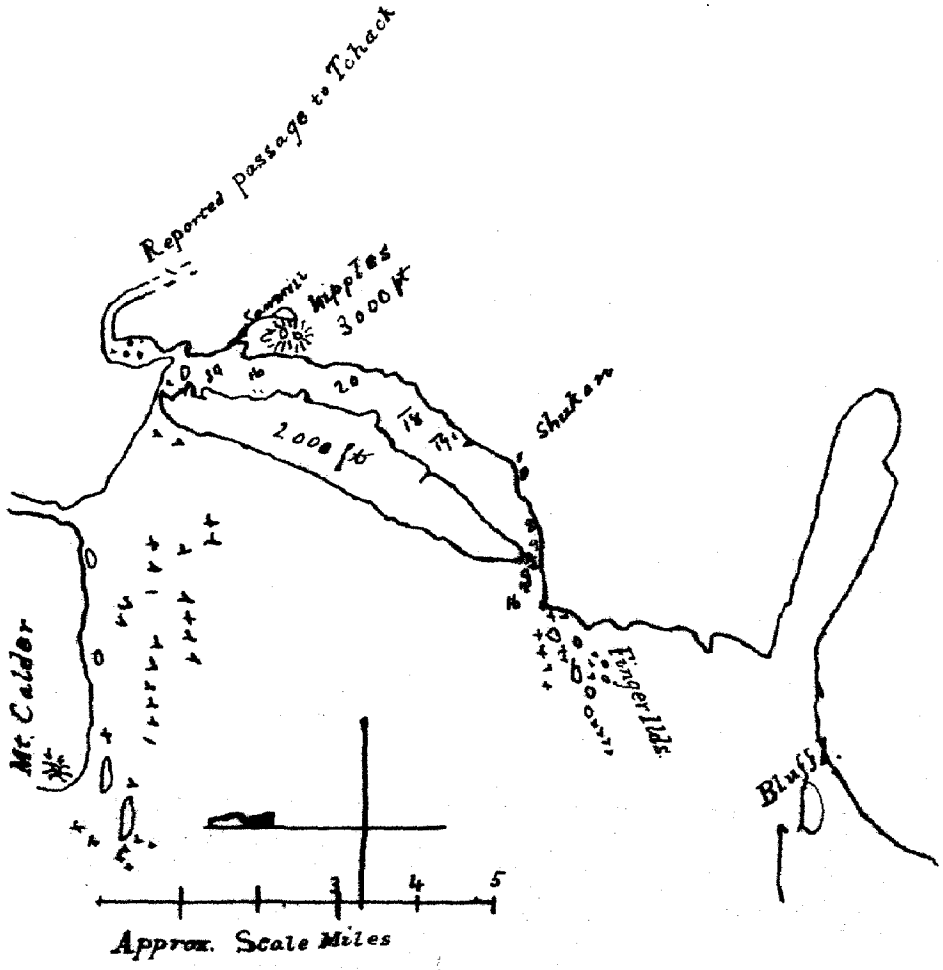
*Los Hermanos of Galiano's atlas; usually rendered into Russian Tumannoi Islands on Russian charts, and called by La Perouse Isles de la Croyère.

†A name rendered in Russian by Rishénia or Razrishénia.

‡Powell, Contributions to Am. Ethnology, vol. i, map of Alaska; *cf.* U. S. Coast Survey Chart No. 701, corrected to 1877.


SUMNER STRAIT
(British and Russian Charts
with corrections by the U. S. Coast Survey)
1882
SOUNDINGS IN FATHOMS
CHATHAM STRAIT
KUPREANOF ISLAND
PRINCE OF WALES ISLAND
WRANGELL I.
KUIU I.
KAMMENOI I.
MITKOFF I.
BARANOF ISLAND
TEBIENKOFF BAY
Village
Mt. Calder
Cape Decision
Cape Pole
Pt. Agassiz
Patterson Glacier
Great Glacier
Stikine River
Inhoot River
Kumkalish River
Pt. Ellis
Pt. Sullivan
Pt. Kingsmill
Pt. Baker
Pt. Barrie
Pt. Colpoys
Pt. Amelius
Pt. Stanhope
Pt. Wade
Pt. Shakesu
Pt. Highfield
Pt. Madan
Coronation I.
Marvel
Shakan I.
Kashevarof Passage
Clarence Strait
Bradfield Canal
Seward I.
Nautical Miles

Shukan
1891
L.D.B.



From its western end a reef projects some distance. A short distance eastward from this island is the entrance of an inlet which is believed to connect with **Davidson Inlet**,* which extends northward from Otter Sound; the latter continued still farther to the northward by a passage carrying sixteen feet of water at high water, but obstructed by rocks, shoals and islets, which unites with Shakan Inlet north of the Nipples. The body of land included between the Bluff Island arm, Davidson Inlet and Sumner Strait has been named **Kosciusko Island** by the superintendent of the U. S. Coast Survey, and extends about ten miles in a north and south direction, with a variable width. A remarkable peak of considerable height occupies the center of the island, and near **Ruins Point**, its northwestern extreme, just within the entrance of the Bluff Island arm, an Indian village more or less decayed is reported. These waters and those hence to Port Protection are only known by the most superficial reconnaissance, and of course very imperfectly represented on the charts. Northward from Ruins Point, near the opposite point of entrance to Bluff Island arm, are the **Finger Islets** a group of which the outer ones are connected by reefs, partly exposed at low water and are bare, the inner ones wooded; until closely approached they seem all connected together.

Between Ruins Point and the Prince of Wales shore **E NE.** from Barrier Island is **Shakan Bay** about five miles wide **N NW.** and **S SE.**, at the head of which are the entrances to **Shakan Inlet.** At the north extreme of the bay, about a quarter of a mile from shore, *a reef* begins, extending about two miles and a half in a **W SW.** direction toward the southern part of Barrier Island. This is probably what on most charts is represented as a reef in the middle of Shakan Bay, where, in reality, there is no reef. It is marked by rocks awash at low water and by kelp.

The entrance to Shakan Inlet is about the middle of the bay and readily distinguishable from a distance. It is divided into two arms by Hamilton Island, a large island, which is encircled by the inlet which also winds to the northward, eastward, and southward joining Davidson Inlet somewhere east of Shakan Island. The south arm of the inlet opens between Hamilton Island and **Shakan Island**, the latter forming the north shore of Bluff Island arm, which cuts it off from Kosciusko Island, as the rocky northern extension of Davidson Inlet separates it from Prince of Wales Island. Shakan Island, therefore, is partly encircled by Prince of Wales and Kosciusko islands, and in turn partly encircles Hamilton Island. In its southern part a rather conspicuous peak rises near Bluff Island arm, while at its northern extreme are the twin peaks, or **Shakan Nipples**, which form quite a landmark, visible from near the Hazy Islands.

Shigan Shakan.

Within the entrance of the south arm is the deserted village of Shakan or Shukan,† whose three large houses are visible for a considerable distance and may be run for as a landmark for the entrance. Before reaching the village a point makes out from Hamilton Island called Anchorage Point. South from this a bar extends, on which anchorage may be had in ten fathoms, mid-channel. Between Finger Islets and Anchorage Point no dangers are known to exist. Farther in, off the village, there is anchorage in eighteen to twenty-five fathoms close to the shore, but deep water in mid-channel, and this holds good according to lately received data at least as far as a rocky projection of the shore of Shakan Island, where a stream comes in from the south.

Gone 1895

From the vicinity of the village the inlet runs **NE.** for about three miles, when there is an islet on the northern shore, and then turns more to the northward for about three miles farther. About five miles from the entrance is a saw-mill and an island beyond it. Up to this point Shakan Inlet will average about a mile in width with very deep water. Off the saw-mill there is ~~said to be~~ anchorage in ~~twelve or fourteen~~ fathoms, soft bottom. The inlet then continues around Hamilton Island, branching near Shakan Nipples, and sending off the passage north and east of Shakan Island which has been mentioned as connecting with Davidson Inlet, and at high water, though obstructed by rocks and islets, the steamer *Rose* carried sixteen feet through. It is said to be nearly dry at low water in some places.

9 to 10

The westerly proceeding arm of Shakan Inlet reaches Shakan Bay north of Hamilton Island, and near its mouth is said to afford anchorage. It is a clear passage for vessels.

The position of the Shakan village was determined by the naval officers on the *Hassler* in 1881 as

Shakan village is properly at 1 mile SE. of sketch

Latitude ..... **56° 09′.4 N.**
Longitude ..... **133° 38′.4 W.,**

and the variation of the compass about 30° 03′ easterly, the magnetic dip being 74° 50′.‡

The shores of the inlet are densely wooded and rocky, the beaches composed of pebbles and boulders of slate and sandstone. The soil consists of about a foot of loam and vegetable matter with gravel deeper down.

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* In honor of Assistant Geo. Davidson, who directed the first Coast Survey party in Alaska, (in 1867,) and subsequently observed the eclipse of 1869 on the Chilkat River. Named by the U. S. Coast Survey in 1880.

† The name is written both ways and is probably of the same original derivation as **Shakhine.**

‡ The magnetic and astronomical station at this locality is about one mile from the entrance on the south shore of Shakan Inlet. It is about twenty feet from high-water mark and about midway between and in front of the two easternmost ruined log-houses. Directly south is the dense forest. From the station Mount Calder bore N. 37° W. The station is marked by a pine post painted white, with the legend "U. S. Coast Survey, 1881."

The entrance is recognizable by Mount Calder to the north; by an abrupt, high, double-peaked mountain to the south; and inland, apparently a little to the northward of the center of the entrance, is the high double peak called Shakan Nipples. The best anchorage is that on the bar at the entrance of the inlet in eight or ten fathoms, hard bottom, Anchorage Point bearing north. There is no good anchorage at the deserted village. Off the saw-mill and directly in front of it is anchorage in fourteen fathoms, muddy bottom.

Anchorages.

Near the northern headland of the bight, N. by W. ¼ W. thirteen or fourteen miles from Cape Pole, is **Barrier Island**, an irregularly shaped high island, about two miles in length; from the western side and round to the northern point of which a large number of rocks and some islets extend a mile to a mile and a half from the shore. This island according to latest data is somewhat differently shaped from its form on ordinary charts, and is composed of two parts, which are connected by a bar or reef which is nearly covered at high water, when the island appears as two islands. Northward from it are some rocks, and the passage between it and the shore is obstructed by rocks extending across from Prince of Wales Island toward its S SE. extremity. N NE. from the island, on the main shore, is a cove in which anchorage was reported to the U. S. Coast Survey party of 1869, near a village of the Hanneegah Indians. NE. by E. from this anchorage is a hill two thousand feet in height.

Northwesterly about three miles from the northern part of Barrier Island lies *a dangerous reef*. It is bare at low water, about a mile and a half off the main shore eastward from it, and is in line between Beauclerc Island in the mouth of Port Beauclerc and the peak of Mount Calder. It uncovers at about half tide.

Calder Rocks.

About three-quarters of a mile NW. by N. from this is *another rock*, which probably never uncovers and is generally marked by a breaker. On most charts these rocks are represented as northward of their true position according to Lieut. Commander Nichols.

About four miles N. ¼ W. from the northern end of Barrier Island is a small bay a mile and a half long N. and S. and a mile wide, with the entrance marked by two small bare islands just south from it near the shore. It is protected from northerly and easterly winds, and it is considered by the traders to be as good an anchorage as Port Protection and rather more accessible. It has been named by them Port Labouchere,* but no data are at hand as to its extent or depth of water.

Port Labouchere.

According to Russian authorities, six miles N NW. from the northern point of Barrier Island lies the southern headland of Port Protection, named by Vancouver. The northern headland of the port lies from the former three-quarters of a mile north, and consists of an islet close to the shore, with which it is united by a sand-bank. There are several other islets and rocks north and east from the first-mentioned islet, whose southern point was named by Vancouver **Point Baker.**†

Port Protection.

Navigators generally have taken this name as referring to the NW. extreme of Prince of Wales Island, and probably this is the most satisfactory way of treating it. In the following description, however, Vancouver's designation is retained as he gave it.

The islets are flat and wooded, while the main shore is hilly. The general direction of the port is SE. by E. ½ E. somewhat less than two miles, with an average width of half a mile. The southeastern portion terminates in two shallow coves,—the northern one communicating by a passage wide enough for a boat, with a basin nearly half a mile in extent.

The channel is clear and free from obstructions, with the exception of *a rocky patch* visible at low water and marked at all times by kelp. This lies about SE. by S. from the southern point of the island on which Point Baker is situated; is about a cable in extent, with a clear passage between it and Point Baker Island a cable wide, and a passage more than three cables wide between it and the shores to the southward. There is eight to twelve fathoms water close-to all around it.

Vancouver anchored in the western part of the port a cable W SW. from the end of a projecting rocky point—which becomes an islet at high water—and in line between the end of this point and the southern headland,—the northern headland bearing about NW. ½ W.

In this situation the bottom appeared hard, with a thin coating of mud, and the soundings were very irregular. In the western part of the harbor the depth varies from twenty fathoms to forty or even fifty near the entrance. Vancouver remarks that his anchorage was somewhat exposed to winds from the north and northwest, which might have been avoided by taking a station higher up in the harbor, or in a snug but very contracted cove to the east of the rocky point or islet.

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* The steamer *Labouchere*, belonging to the Hudson Bay Company, was one of the first steam vessels on the northwest coast, and was engaged in trading there for many years. Her officers by necessity became their own pilots and hunted up many snug anchorages where they could find shelter in their trading voyages. To half a dozen or more of these the name Port Labouchere has been applied by residents and traders. It is well to preserve the name for some one of these places, and probably the above is as good as any to select for the purpose.

† The name, being misapplied to the northern point of the island on his plan, has since been indifferently applied to the whole peninsula which guards Port Protection from the north. It was named after Lieut. Joseph Baker of Vancouver's party, who drew the maps contained in Vancouver's Atlas.

In the southeastern part of the harbor the soundings range from three to twenty-five fathoms. The shores are generally steep, rocky and covered with a dense forest of pine and other trees. From the termination of the port, about S. by E. ⅞ E. four or five miles, the land rises to the peak of **Mount Calder**, named by Vancouver, ~~and supposed to be an extinct volcano~~, about ~~five~~ thousand feet in height. It is somewhat surprising to find that this peak, regarded by Vancouver as remarkable, has been with difficulty identified by later visitors. In reality it would appear to be about half the height usually assigned to it, and so nearly similar in that respect to numerous other adjacent peaks as to render it doubtful which of them should bear the name, since from different points of view, different peaks might be regarded as the most prominent. The peak decided on by the latest observers is a peculiar wedge-shaped mountain terminating in a very sharp ridge. It bears E. by N. from the entrance to Port Beauclerc, is visible from the vicinity of the Hazy Islands, and coming from the westward opens when the navigator is about two miles eastward from the NW. point of Prince of Wales Island. The mountain is situated two or three miles eastward of Port Labouchere. Vancouver saw it when four or five leagues west of Cape Addington, the distance being about fifty-five miles.

3 to 4000

The latitude of Point Baker, according to Vancouver, is 56° 20′ 30″ N. The longitude is variously stated from 133° 31′ 30″ W. to 133° 38′ W.

There is much probability that the whole western part of Prince of Wales Island and the southern part of Kuiu Island are represented on most charts from three to eight minutes of longitude too far east. At present the accessible data are insufficient to correct the shore line in a satisfactory manner.

The variation of the compass was determined by Vancouver, in August, 1793, to be 26° 27′ E.*

His observations also indicate that the flood-tide comes from the south, and that it was H. W. F. and C. at $7^h\ 40^m$.

The port affords several streams of fresh water and abundance of wood; wild fowl, berries and various kinds of fish in their season. A plan of this harbor was made by Vancouver, which was published in an enlarged form by the Russians, and of which a reduction is also to be found in the Atlas of Harbor Charts of Alaska issued by the U. S. Coast Survey. No directions are necessary for entering it except that the northern shore should not be approached within three cables until the southern headland bears SW. by W. ½ W., to avoid the *rock in the entrance*, which only uncovers at low water.

In Sumner Strait, about a mile to the northward of Point Baker, is situated a bank on which the meeting of the tides, especially in flood, cause a tide-rip or agitation of the water which ~~might~~ presents to the navigator the appearance of a danger. Vancouver, ~~however~~, after many trials found the soundings irregular, but nowhere less than fifteen fathoms on it, and between it and the shore no bottom could be gained with sixty and seventy fathoms of line. In June 1886 Lieut. Hale, U.S.N., developed a rock with 9 ft. of water over it lying on the bank

Tide-rip.

From Cape Decision N. by E. ½ E. eight miles lies the low rocky point named by Vancouver **Point St. Albans**, and placed by him in latitude 56° 07′ N. In this locality the multifarious islets, rocks and pillars which characterize the coasts of Kuiu Island in particular extend about three miles to the southward from the point.

See Chart 1282 of 1886.

Between this point and Cape Decision lies the entrance to a singularly shaped indentation called by Vancouver **Affleck Canal**.

Nearly in line with the cape and point lies **Fairway Island**, a small, rather high island with several rocks and islets near it, and *a long and dangerous reef* is alleged to extend about SE. by S. from it. This island, though placed on the chart by Vancouver, has been accidentally omitted on several later charts and hence was reported as a new discovery in 1879.† It is said to be forty feet high.

Captain Bailey reports this island to be about three-quarters of a mile in extent with scattering timber upon it, with *a rock* near its northern side, several off its N NW. end, and three dry rocks lying off its E SE. end, the outer one about half a mile from the island. All these rocks are above water.

TO CLEAR FAIRWAY ISLAND AND REEFS.

A course SW. by S. ¾ S. laid to approach Point St. Albans not nearer than a mile and a half and Cape Decision not nearer than a mile will pass outside of all these dangers.

Between this group and the rocks respectively surrounding the headlands above mentioned there appears to be a clear passage on either side. From these entrance-islets to its inner termination the general course is NW. ¾ N. about eighteen miles. Its average width may be taken at two miles.

From Point St. Albans the shore takes a W. by N. direction, bristling with rocks and islets for four and a half miles, at which point the rocks terminate on the eastern shore, and thence to the northern head of the canal, in latitude 56° 20′ N., that shore becomes straight and compact, trending about NW. ¼ N.

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*It is probably two or three degrees greater at present.

†Report by Capt. Geo. W. Bailey on the cruise of the U. S. Revenue Steamer *Rush* in 1879, Washington, 1880, p. 35.

The western shore of the canal from Cape Decision northward trends about NW. by N. ½ N., and is indented by three large bays of nearly equal extent, averaging three miles long E. and W. and about two miles broad. The shores of the northern and southern bays are more or less embarrassed by rocks. In this vicinity the adjacent country is uneven, wooded and moderately elevated. The sides of the northern portion of the canal are mountainous but not so steep as the shore of the main. Its termination is formed by low, flat land, covered with trees, that seemed to Vancouver to extend as far as could be discerned in a N NW. direction, through which flat country flow several streams of fresh water.

No soundings here or new information in regard to this canal has been recorded since the visit of Vancouver in 1793.

From Point St. Albans N. by W. ½ W. about six miles lies a point called by Vancouver **Point Amelius**, and between these two headlands the coast recedes, forming a bay, which is most marked immediately to the westward of Point Amelius. Three miles to the northward of Point St. Albans is a snug cove, in which Whidbey's party were effectually protected "against a very strong easterly gale of wind that blew during the night with great violence."

Beyond this the greatest indentation of the coast reaches about two miles and a half, and off it, extending in a crescent from Amelius to St. Albans and projecting into the waters of Sumner Strait three or four miles from the shore to the westward, is a multitude of *rocks and islets*, rendering this stretch unnavigable except for boats, so far as information on record may be relied on.

Point Amelius is directly abreast of Barrier Island, the latter bearing NE. by E. ½ E. from the point, and between the rocks and islets respectively fringing either shore the clear passage is not less than three miles wide.

Immediately to the northward and westward around Point Amelius lies Port Beauclerc, named by Vancouver, and whose northeastern headland bears from Point Amelius N. by W. four miles. This headland is moderately high, with a broad termination facing for the space of a mile to the southeast. The opposite point of entrance bears S. by W. about two miles.

Port Beauclerc.

The entrance of the port lies W. by S. from Mount Calder and is marked by **Beauclerc Island**, on range with the center of this island and the peak of Mount Calder. *Calder Rocks* are situated as above described, about a mile and a half from the Prince of Wales Island shore. Beauclerc Island lies a mile and a half SE. from the face of the northern headland half a mile off the entrance, with some rocks about it. There are also some rocks about each angle of the headland.

Within, the shore trends from the north headland in a generally NW. direction, and the opposite shore rounds to the northward, westward and southwestward, giving a triangular form to the inner part of the harbor, the western shore of which trends NW. by N. ½ N. nearly six miles from the southern angle to the northern one. In the middle of the triangular inner harbor is an island, and five or six islets and rocks are to be found in this vicinity. These islets have clear passages on either hand, and inside the harbor are regular soundings in thirteen to twenty fathoms. The surrounding shores are in general moderately elevated, well wooded, and water is very accessible.

According to Vancouver, Port Beauclerc forms an extremely good harbor—its access and egress free from every obstruction except such as are sufficiently evident to be avoided. He placed the northeast headland in latitude 56° 17′ N. No special chart of this port has been published, and Vancouver is the only source of information in regard to it.

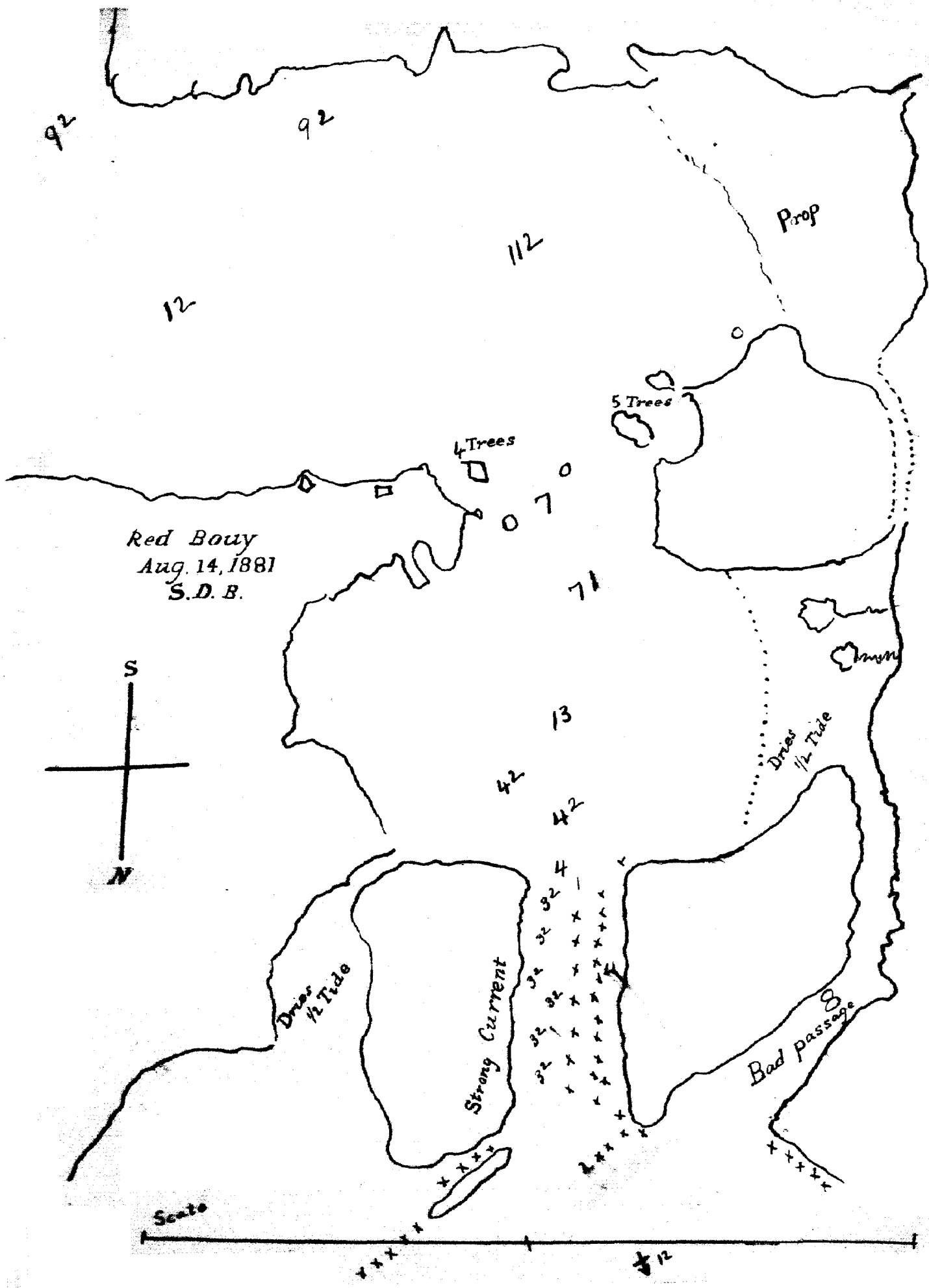
From the eastern angle of the northern headland of Port Beauclerc the coast takes a generally NW. by N. direction for sixteen miles,—there being a number of subordinate indentations, mostly obstructed by *rocks*, which extend in many cases to a considerable distance from the shore, making navigation in this vicinity perilous in the highest degree, and even for boats and small craft requiring the exercise of the greatest circumspection. Thence the course trends two and a half miles E NE. to a point forming the southwestern headland of Keku Strait.

Dangers.

From the northeastern point of entrance of Port Beauclerc the southern termination of an island about three miles long and less than a mile wide bears NW. by N. ½ N. six miles. This island has two islets near its southern end. In the space between its northern end, the shore of Kuiu Island and the southern part of Conclusion Island, are an immense number of *rocks*.

From the same angle of the previously-mentioned headland Barrie Island bears N. seven miles. It is wooded, eighty feet high, and about a mile in extent. This island from the southward appears like two islands at high water, being nearly cut in two. It is about a mile long N. and S. and somewhat less in width, with a ledge of *very dangerous rocks* extending fully a mile and a half S. by W. from its southern point. The passage between this and the last-mentioned island is over two miles in width and apparently clear of dangers.

About a mile and a half NW. from the northern end of the inner island is **Conclusion Island**, named by Vancouver, about three miles long W NW. and E SE. and half as wide. Along its northern and northwestern shores are *numerous rocks*. From its northeast point the eastern headland of Keku Strait bears N. by W. three miles. The area to the north and west from this line, according to Vancouver, seemed to be also "bounded with such an infinite number of rocky islets, and rocks above and beneath the surface of the water, that the navigation was very intricate and dangerous even for the boats."


9 2
9 2
12
112
Prop
5 Trees
4 Trees
0 7 0
Red Buoy
Aug. 14, 1881
S.D.B.
71
S
N
13
42
4 2
4
Dries ½ Tide
Dries ½ Tide
Strong Current
Bad passage
Scale
12

From the eastern headland above mentioned the trend of the shore, exclusive of irregularities, is in general about **SE. ½ S.** five miles to a point named by Vancouver **Point Barrie**, which is apparently of moderate height and forms the eastern extreme of the large bay included between it and the northeast headland of Port Beauclerc.

Approaching from the eastward, Point Barrie seems low and has much the same appearance as the opposite northwestern extreme of Prince of Wales Island, generally called Point Baker, and which will here be called **North Point Baker**. When nearly abeam of North Point Baker, an island is seen **S SE.** from Point Barrie and connected with it by *a reef*. The northern shore of Sumner Strait hereabout is bold. Three miles eastward from Point Barrie is a high table-topped bluff, off which appear *several dangerous reefs and rocks awash*.

From Point Barrie **Point Mitchell** bears **NE. ½ E.** nineteen miles. This point was named by Vancouver and placed by him in latitude **56° 29′ N.** Between it and Point Barrie, at a distance of twelve miles from the latter, is the opening of a large bay five miles long **E.** and **W.** by three miles broad, in which are two or three rocky islets and many rocks. Off the coast between these two points are numerous islands, differently placed on various charts, and, with adjacent rocks, extending southward from the shore of Kupreanoff Island about two and a half miles into the strait. For this reason navigators will do well to keep to the southward of the outer islets in this vicinity until more is known.

On the southern side of the strait North Point Baker forms the turning point, beyond which Sumner Strait curves more to the eastward. This point is formed by an island. From the eastward it appears long, low and covered with trees to the water's edge. On approaching nearer, a small islet and rock apparently extending **N NW.** come open. The islet is really about a mile to the southward. The rock is the extremity of *a reef* which extends a cable and a half northward from North Point Baker. From the point Mount Calder bears **S. by E. ⅝ E.** Seen from the southward, North Point Baker appears as a long point of land terminating in a higher wooded knoll, between which and the rise on the main island is a noticeable depression in the center of the point.

Eastward from North Point Baker the northern shore of Prince of Wales Island is slightly curved to the southward, making in about three-quarters of a mile and contains several indentations. About nine miles eastward from the point the land along shore is low and grassy, like tidal marshes.

The shore seems bold and free from outlying dangers. Farther eastward there is a series of islets close in along shore, and the coast is very irregular, being broken up into numerous little bights with small rocks lying a short distance off shore. About fifteen miles eastward from North Point Baker is the entrance of Red Bay, named Krasnaia Bay by the Russians, and resorted to by their traders. The anchorage is indicated as at the entrance of a long and narrow bay whose form and position are differently represented by Tebienkoff and the Russian hydrographic charts. It should be noted that there is a difference of at least 8′ in longitude between Tebienkoff and Russian Hydrographic Chart No. 1493,—the latter being to the westward. The differences increase and the inaccuracies of all the charts become very manifest in the region about the mouth of the Stikine River. For this reason the description here given will be of a general character. Red Bay was visited by the *Hassler* in 1881, and from the notes then taken the following description is derived:

Red Bay.

As previously mentioned in the description of Clarence Strait, (page 90,) westward from Point Colpoys, the northern extreme of Prince of Wales Island, westward from the western extreme of California Bay, is indented by several small bays and one large one about three-eighths of a mile deep and a quarter of a mile eastward from Red Bay, from the entrance of which it is separated by *a reef of rocks* making out in a northeasterly direction two or three cables. This bay has been termed **Carroll Anchorage** from the fact that Capt. Carroll, of the steamer *California*, plying in these waters, has anchored here and found it a good anchorage. The depth of water is ten fathoms, the holding-ground is good, with perfect shelter from all southerly winds. It connects with Red Bay by a passage quite narrow and dry at low water.

At the entrance of Red Bay there is an indentation of the shore, extending inland three quarters of a mile with a width of two miles and a half. Near the middle of this indentation is the narrow passage to the inner bay, and the place may be distinguished from the other bights near, by this gap and the bare peak of **False Mount Calder,*** which over the gap bears **S. ½ E.**

Eastward from the entrance a point makes off northeastward with dry rocks and *a reef* off its end, extending about three cables and having about a cable dry at low water. West from this point the outer anchorage of Red Bay affords good shelter and holding-ground in ten fathoms.

The entrance to the bay inside is about three cables wide at high water, with the best channel on the eastern side, affording three or four fathoms at low water. In the middle of the passage, on a hasty examination, there seems to be *a shoal or bank*, having less than three fathoms on it at low water, and probably rocky. From the western point of this entrance *a reef* half a cable long extends with its outer end bare at low water. The direction of the passage is **N.** and **S.** somewhat over half a mile. West of the mid-channel bank referred to there is kelp and possibly rocks. On this account the eastern passage alone should be used. At its southern end the passage opens into a broad bay about

* Named by Nichols in 1881.

a mile in extent, with thirteen fathoms in the middle, but shoaling toward the east and west shores. Here are, on the west, several islands at high water, when a passage makes out to Sumner Strait west from the land forming the west point of entrance to the inner part of Red Bay. To the southward there is a group of islands and a peninsula puts out from the eastern shore. In the passage between the islands seven fathoms may be had. South of this passage the bay turns nearly due east for a distance of two or three miles E. and W. and over a mile wide. At this point it makes another sharp turn due south two miles and becomes a little narrower, extending to the foot of a high bare peak, called by Nichols False Mount Calder. West from the peak there is a divide, probably a portage, and possibly a canoe passage to inner waters connecting with Davidson Inlet.

There are several streams emptying into this beautiful bay, and plenty of water wherever the lead was put down. On the south side of the peninsula referred to is an Indian settlement of one or two large houses. *Chogusette has a fishing station & ——— store.*

At the entrance a current of three or four knots was noticed at the ebb, running out of the bay and close along the eastern shore and reef. There was no especial current at the outer anchorage. No astronomical observations were taken.

The peak of False Mount Calder bears S. ½ E. over the entrance to the inner part of Red Bay.

The Eye-opener.

The same range prolonged N. ½ W. about four miles off shore indicates the spot where lies a rock, called by the Russians *The Eye-opener*, (Atkroi-glaza,) which forms a serious danger, as it is said to be covered at high water and has from twelve to twenty-four fathoms immediately about it.

This rock has also been called *Shoo-fly Rock* by some of the local navigators. It is hardly more than awash at high water. A spindle six feet high, of iron, was put on the rock by the U. S. S. *Wachusett*, but it is believed to have been since washed away. There are said to be *dangerous shoals* near it.

RANGE TO CLEAR THE EYE-OPENER.

Keep Point St. John, Zarembo Island, just on with Station Island (on the north side of Sumner Strait, near Wrangell Blind Passage) until Red Bay is abeam bearing S. by E. to S. This carries clear south of the reef.

The peak of False Mount Calder, which is a mark for the reef, is noticeable from the eastward as being a bare isolated mountain about three thousand feet high.

Passing up the strait on a course N. by E. ¼ E. with the *Eye-opener* at a distance of two miles, *Vichneffski Rock* shows close under Point St. John. It is a long, low, black rock about one mile off shore, rarely if ever covered by water. Its general length is E. and W., and it lies about a mile westward from a point projecting from the shore of Zarembo Island, about two miles south from Point St. John. It bears E. by S. ¼ S. from the eastern extreme of Level Island.

RANGE TO CLEAR VICHNEFFSKI ROCK.

Keep Point St. John well open E. from Station Island, which clears the rock from either direction. When the two small islands NW. from Level Island come out, going to the eastward, the rock has been passed.

Point St. John * forms the northwestern extreme of Zarembo Island. Near it to the northward and eastward are several (four to six) small wooded islands, northeast from which is **St. John Harbor**, said to be a good anchorage in eighteen fathoms, but of which no other information has been received.

To the eastward of this vicinity late observations show great discrepancies between the ordinary charts and the actual disposition of the shores and islands, and this deficiency is only partly made up for on the chart in this volume showing the approaches to the Stikine River.

Eastward from Point St. John, Sumner Strait trends more to the eastward, the general direction being about NE. ½ E. The northern shore of Zarembo Island is free from off-lying rocks and islets until two small wooded islets are reached, which lie eastward from an inconsiderable indentation of the Zarembo shore known as Baht Harbor, named by the Russians.† It is of small extent,

Baht Harbor.

regarded as a good anchorage, and has been visited by the *Hassler*. The islets are all to the eastward of the NE. point of entrance, (off which extend *some rocks*,) and also of a smaller bight beyond this point. The anchorage is in eight to twelve fathoms, soft bottom, two or three cables off shore in the middle of the bight. At high water the navigator should not seek less than twelve fathoms water. Just eastward from the islets is Point Craig, before described, (see page 94, Stikine Strait,) off which a *short reef* extends to the northward.

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*Named by Vancouver, on Chart No. 7 of his Atlas.

†The **Bath Harbor** of most charts not Russian. Named for Engineer Baht, of the Russian-American Company's steamer *Alexander*.

Returning to the northern shore of Sumner Strait from Vichneffski Rock, the **NE.** extreme of **Level Island*** bears **W.** by **N.** ¼ **N.** This island is well described by its name, being low and flat, and forms an excellent landmark. According to Nichols, it is considerably misplaced on ordinary charts. It is about three miles long in a generally **SW.** and **NE.** direction.

From its northeastern extreme *a low reef* makes out a half to three-quarters of a mile in the same trend toward *a white rock* half a mile farther in the same direction, and which is always bare, and there is believed to be a passage between it and the end of the reef.

In a northerly direction and about two miles and a half from Level Island is *a rock*, probably covered at high water, and about half a mile from it **N.** by **E.** is *another rock* of similar character. The first bears about **S.** by **W.** a mile and a half from the west point of entrance to Wrangell Strait. ***Dangers.***

From Level Island, Point Mitchell is distant about three miles in a westerly direction. Nearly west from the **NE.** extreme of Level Island are two small islets near the Kupreanoff shore. Coming from the eastward, south of Level Island, these two shut in before the navigator is up with *Vichneffski Rock.* From Point Mitchell the shore curves to the northward and then forms, with the opposite coast of Woewodski Island, a large inlet named by Vancouver **Duncan Canal,** the course of which appears to be about **NW.** by **N.** ½ **N.** for some ten miles and afterward **NW.** by **W.** ½ **W.** about fifteen miles. The entrance is formed between the southwestern point of Woewodski Island and a projection of the Kupreanoff Island shore opposite, and is about two miles in width.

Off this entrance are a number of rocks and islets. Within, the canal is more or less supplied with islets and rocks, especially toward the western shore; the shores are very irregularly indented, though the average width does not appear to much exceed two miles exclusive of several shallow bays.

In about latitude **56° 40′ N.**, according to U. S. Hydrographic Chart No. 225, a channel, which has received the name of **Duncan Passage** on recent charts, leads from Duncan Canal to Wrangell Strait, cutting off Woewodski Island† from the Lindenberg Peninsula of Kupreanoff Island. This passage is short and much obstructed by islands, with about three fathoms water in it. Its northwestern point of entrance on Duncan Canal was named by Vancouver Point Hood, and placed in latitude **56° 44′ N.** From this point the canal trends more to the westward, terminating, according to Vancouver, in a wide shallow bay, bounded to the northward by a low sandy flat, in latitude **56° 58′ N.**

The southern termination of Woewodski Island is two or three miles broad, and its southeastern extreme forms the western point of entrance to the southern end of Wrangell Strait. Opposite it, in a northeasterly direction, somewhat less than a mile, is Point Alexander of Vancouver, which, according to observations by Nichols, is in about

Latitude	**56° 31′.5 N.**
Longitude	**132° 55′.0 W.,**

and is apparently of moderate height and wooded.

Eastward from this point the astonishing discrepancies between the ordinary charts and the results of the *Hassler's* recent reconnaissance render it a most unwelcome task to attempt to describe (or place on the charts of this volume) the features of hydrography; since the new observations, however excellent, are not continuous, and the adjustment of differences in the absence of complete data must be for some time longer postponed. However, it will be attempted to give some hints toward a description, though aware that it cannot but be more or less faulty in detail.

The eastern portion of Sumner Strait was called **Stikine Strait** by Tebienkoff, a name previously adopted by Russian cartographers for an adjacent body of water. It has also been termed **Stikine Sound;** but, while this name would be applicable, the necessity of dividing the strait into several nominal bodies of water does not seem evident any more than in the case of Chatham Strait.

About two miles to the eastward of Point Alexander is **Point Howe** of Vancouver, from whence the shore, exclusive of minor irregularities, rounds to the eastward and northward with several islets adjacent to it, and at a distance of about seven miles it is, according to some authorities, broken by **Blind Passage,** an inlet supposed to connect with Wrangell Strait, but dry at low water. *No connection.*

Off the shore, westward from the entrance of Blind Passage, is the island named Station Island by the *Hassler.* It was used as one of the observing stations and is situated about three-quarters of a mile off the Mitkoff shore, without off-lying dangers, and according to Nichols is about **NW.** by **W.** ½ **W.** from Point Craig.

Hence the shore trends for some seven or eight miles northeastward to **Point Blaquiere,** named by Vancouver, and placed by him in latitude **56° 39′ N.,** and situated in about longitude **132° 30′ W.** This point is noteworthy as being the vicinity where the flats of the Stikine meet the shore of Mitkoff

* Named by Meade, in 1869, on U. S. Hydrographic Office Chart, No. 225.

† Woewodski Island, named by the Russians in 1848 after the governor of the colonies, has also been called **Voevodskago Island** on some English and American charts, and a part (?) of it was named **Medvieshi** or **Bear Island** by Lindenberg in 1850. This body of land, bounded chiefly by Wrangell and Sumner straits, with Duncan Canal, is believed to be about seven miles in length in a N. and S. direction and about half as wide as it is long. It is densely wooded and of a more or less hilly character.

Island, thus closing to navigation the southern end of Dry or Soukhoi Strait. Vancouver's boats failed to find any passage, but they also missed the Stikine channel on the opposite shore and that in Wrangell Strait. There are indications that some channel, though possibly too shoal and contracted for ship navigation, may exist on that side of the strait, though a cursory examination by Meade revealed none, and indicated that the channel was impassable for vessels drawing more than four feet of water.

Although it is known that there is a canoe passage through at low water, the question cannot be considered as definitely settled without additional and careful examination. It is stated by residents at Wrangell that the southern edge of the flats is steadily though slowly moving southward, and that they are also steadily shoaling, while the channel through them from the Stikine mouth continually changes.

From Point Blaquiere to the nearest opposite headland of the mainland, near the river mouth, is supposed to be about three and a half miles **NE.** by **N.** This may be said to be the southern entrance of Dry Strait.

On the flats northward from the point is **Sergieff Island**, small and high; the entire area northwestward and southeastward from this island, for a distance of four or five miles, between Mitkoff Island and the Stikine Channel or continental shore, is believed to be occupied by extensive flats partly dry at low water. An anchorage is indicated on U. S. Hydrographic Chart No. 225 in the angle between the southwestern edge of the flats and the shore of Mitkoff Island, but no details are given.

Southward from the flats and westward from Wrangell, Woronkoffski Islands and the main shore, a number of good-sized islands are scattered in the eastern part of Sumner Strait. Their form, number and position are indicated in widely different ways on different charts. The data here given are derived from hasty reconnaissance work by officers of the U. S. Coast Survey and the *Hassler* party in 1869, 1880 and 1881–2. Imperfect as these observations are, they are believed to more accurately represent the facts than anything heretofore published.

SW. from Point Highfield about four miles is **Five-Mile Island**, very small, high, steep-to and wooded;* it was called Piati-Milni by the Russians, who supposed it to be about five miles from Wrangell. A mile and three-quarters **N.** from Five-Mile Island is **Liesnoi Island**, rather low and wooded, about half a mile in extent and five-eighths of a mile south from **Kadin Island**, named by the *Rynda* party.† This island is about two miles by one and a half in extent, wooded, and about eight hundred and fifty feet high. It stands directly on the southern edge of the flats, and the greater portion of its southern shore is bold-to, with a depth of eight to fifteen fathoms. A spur of the flat runs to the southward east of the island, and reaches as far south as the latter. From the end of this spur, with some irregularities, the edge of the flats trends about **NE.** toward the continental shore.

Less than two miles westward from Kadin Island lies **Rynda Island**, three-quarters of a mile wide and more than three miles long **N.** and **S.**, named by the Russians. It is wooded, moderately high, with two knobs or peaks.

Immediately south of it is **Sokoloff Island**,‡ two miles long **E.** and **W.** and half as wide. It is moderately high, and it or Rynda Island may be that appearing under the subsequent name of **Grey's Island** in U. S. Hydrographic Chart No. 225.

This island is remarkable for being composed of two high portions united by a narrow isthmus hardly raised above the sea, which from the south appears like a deep cleft separating two closely adjacent islands. Russian authorities indicate no passage-way between Sokoloff and Rynda islands.

South from Sokoloff Island and separated from it by a navigable channel three-quarters of a mile wide lies **Vank Island**, apparently named by the Russians. It is the largest of the group above considered, and appears to be about four miles long **E SE.** and **W NW.** and a mile and a half wide, and moderately high. On its **NW.** shore anchorage is indicated by Russian authorities without soundings. Off the southern point of this indentation a rock is indicated, not far from the shore. A short distance off the **NW.** extreme of the island is an islet, indicated under the name of Two-tree Islet on U. S. Hydrographic Chart No. 225.

There is a clear passage on either side of Vank ~~Island~~. & of Two-tree Islet.

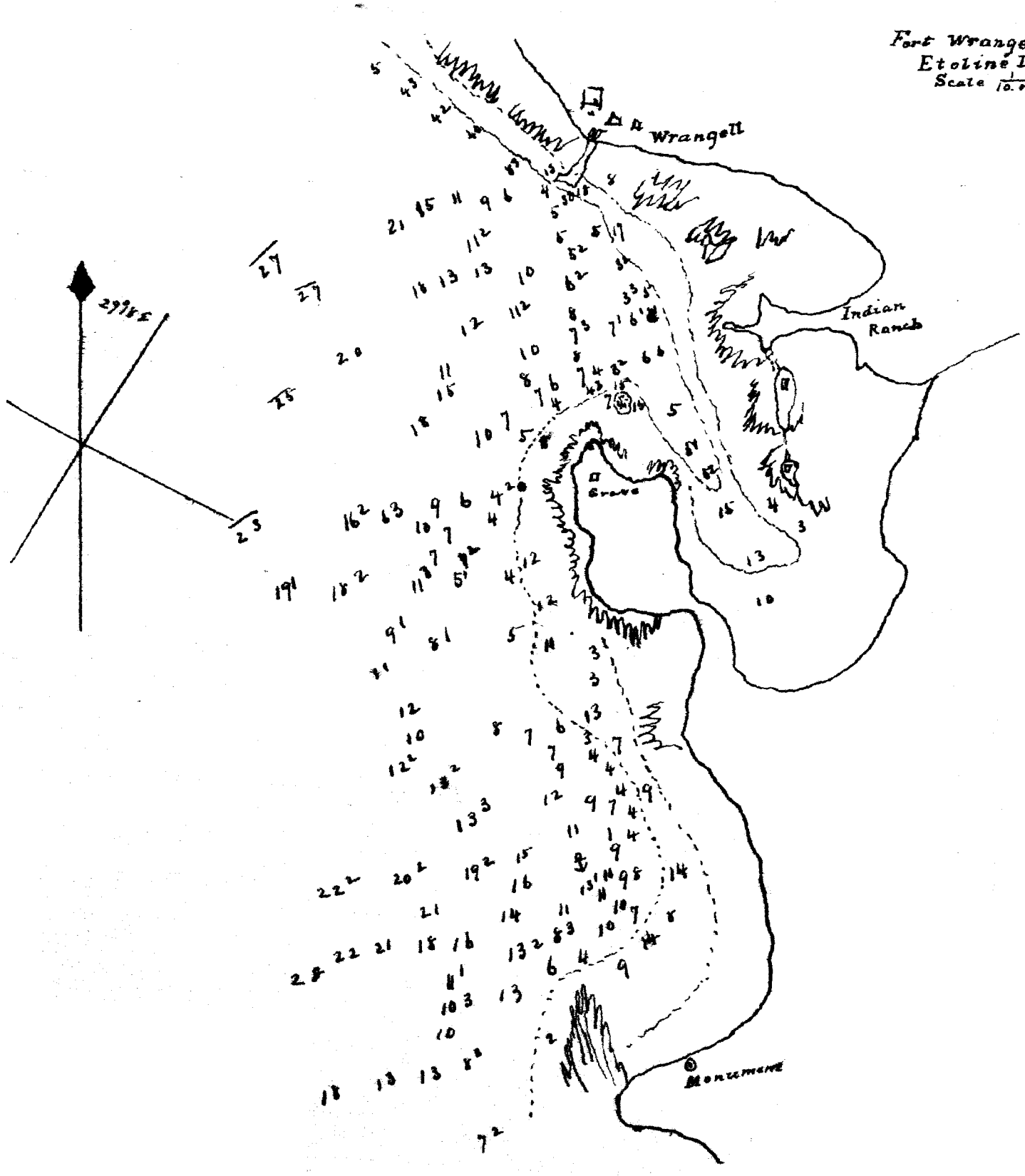
From Wrangell Anchorage the course to clear Vank Island to the southward is **SW. ½ W.** Thence to clear Point Craig the course is west.

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*Scraggy Island, of the U. S. Hydrographic Office Chart No. 225, may be intended for this or Liesnoi Island described above. The discrepancies between Russian Hydrographic Chart No. 1493, British Admiralty Chart No. 2431, and United States Hydrographic Chart No. 225 in regard to this locality on the one hand, and the Rynda chart and observations of recent Coast Survey parties on the other, cannot be reconciled. The features of a map made by Mr. Hunter, a Canadian custom-house officer and surveyor, are equally different from all previous delineations, and evidently unreliable so far as this location is concerned.

†After the veteran pilot M. M. Kadin, a native of the Aleutian Islands, and who drew at Sitka the charts contained in Tebienkoff's atlas, which were afterward engraved there on copper by K. Gregorieff Terentieff, another native of Alaska.

‡Probably named for Mr. Alexander Sokoloff, who has written considerably upon Alaskan topics. *See* Appendix 1, 1879, p. 850.


Fort Wrangell
Etoline Ild.
Scale 1/10,000
Ft Wrangell
Indian Ranch
Cross
Monument
299½ E

Passing from Wrangell Anchorage in a SW. direction the tangent of Kadin Island N. ½ E. cuts the center of the cañon of the coast mountains on the mainland through which the Stikine River reaches the sea.

From Point Highfield, Zelony (Green) Point, near the entrance of the channel through the Stikine flats to the southern mouth of the river, bears N. by W. ¼ W. three and a half miles according to Russian authorities.

It must be noted, however, that these bearings and distances are subject to extensive revision.

About two miles N. from Simonoff or Observatory Islet, according to the Rynda chart, lies the Rynda Anchorage, or Port Rynda, sounded out by the party under Commander Basargin, who explored the Stikine River nearly to the British boundary in 1863. This anchorage is situated in an advantageous position directly at the mouth of the channel leading to the river, and has an extent of a mile in either direction. **Rynda Anchorage.**

The corvette anchored a mile W. by S. from a wooden cross and cenotaph erected over a grave on the continental shore, and N. two miles from Simonoff Islet, having ten fathoms over a bottom of sand and gravel. Russian Hydrographic Chart No. 1493 locates an islet in this vicinity which has no place in the *Rynda* chart. This, very likely, was one of those changeable shoals, dry at low water, which abound near the margin of the flats and may disappear at any time, but especially in times of flood during the spring. At this point there would appear to be easy communication with the continental shore, and except from the SE. the anchorage is very well protected, though the currents at the river mouth must make it, at times, an uneasy berth. The soundings vary from six to eighteen fathoms. On the bar at the mouth of the channel through the flats there is only a foot or two of water at low tide.

THE STIKINE RIVER.

From the anchorage NW. ½ N. about six and a half miles lies one of the principal mouths of the **Stikine River**, the largest river of Alaska east of Mount St. Elias.* This river rises in a small lake in the vicinity of latitude 57° 10′ N. and longitude 128° W., and flows in a northerly direction for some sixty miles, when it receives a large branch from the eastward and curves to the westward through a narrow gorge about fifty miles in length, known as the **Great Cañon.** Toward the lower end of the cañon the river trends more to the southward, and ten miles above the termination of the cañon a tolerably large branch comes in from the northwest. This is called the **First North Fork**, and heads close to the sources of the Taku River. The small town of Glenora, near the mouth of the Great Cañon, is the head of steam navigation; a few miles below, the **First South Fork** enters from the eastward. Below this the river passes through a mountainous region for seventy-five or eighty miles, flowing in a nearly south direction, having thus described a somewhat semicircular figure. It then turns somewhat sharply to the westward, entering the northeastern angle of Sumner Strait through a delta yet insufficiently explored, but which is known to have two or three mouths of considerable size. The topography in the vicinity of the river is mostly mountainous, with some broad valleys, but more numerous narrow ones. Most of these have a certain parallelism with the coast, while some of those through which the Stikine, Naas and Taku rivers reach the sea cut across the ranges nearly at right angles.†

The low lands are usually flat and subject to inundations in heavy freshets; covered with a dense growth of grass, willows, alders and poplar, or dotted with small ponds. For twelve miles above Point Rothsay the river valley is sandy and almost destitute of vegetation. This tract, which doubtless owes its origin to the scouring of freshets, has received the name of the Desert.

The mountains are steep and rugged, but in general afford foothold to a dense forest of coniferous trees, which attain a respectable size. The higher summits reach above the snow-line and afford a permanent source of supply to the numerous local glaciers.

The climate of the Stikine region varies from the coast inland. Toward the interior the summers are short and hot and the winters cold, resembling the conditions of the Saskatchewan region. For particular notes the reader is referred to the Meteorological Appendix. The river is said to be closed

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* The name is a corruption of an Indian word, understood to be the native name of the river, and from which the native tribe inhabiting the continental shore of Alaska from the Taku to Bradfield Canal derives its own tribal appellation. This word, according to the best authorities, is thought to be correctly pronounced **Stah-kheen** or **Stah-khin**. The names applied to the river have been **Stakeen, Stahkin, Stickeen, Stachin** and **Stikine**,—the last mentioned being that usually adopted on the western coast in newspapers and books. It was also adopted by the U. S. Coast Survey in the Coast Pilot of 1869. There seems to be no good reason why we should attempt to retain the Indian pronunciation after it has been universally discarded by the population most interested. The river has also been erroneously called "**Frances**" and "**Pelly**" **River**,—names belonging to streams of the interior.

† In fact, the same type of topography prevails upon the continental border as that exhibited in a half-submerged condition in the Columbian and Alexander archipelagos. If the latter were entirely elevated above the sea-level, they would in essential features resemble the present continental border, and, were the valleys of the last depressed below the sea level, a similar extension of the archipelago, without change of character, would be the result. Sumner Strait appears to be merely the prolongation seaward of the valley of the lower Stikine.

by ice in December, sometimes as late as the seventeenth, and to open in May, usually previous to the fifteenth and often by the first of the month. The opening is followed by a temporary rise and fall, and at its first opening, from floating ice, drift-wood, snags, &c., is not navigable for several days. The highest water is said to occur in July, when the hot sun is melting the snow on the higher levels, and this indicates that the chief source of the water-supply of the river is in the snows of the mountains rather than in the drainage or rain-fall of the lowland region. The depth of water in the channel for the twenty-five miles represented on the *Rynda* chart, in the latter part of May, was nowhere less than six feet, and the average depth at least twelve feet. It is stated that at lowest water there is seldom less than three feet in the channel. The rise in the channel, or in vertical height of the water, does not appear by the water-lines of the margin to increase more than six feet at highest water. The difference in the volume of water transported is made up for by the flooding of the low lands. Through this horizontal extension results a general and very perplexing change in the form, direction and appearance of the river margins. The waters are invariably turbid. This is mostly due to the fine suspended material transported by the glacier streams.

The chief obstacle to the free navigation of the river is the impetuosity of the current. This is stated to average four or five miles an hour from the gate of the Great Cañon to the delta, and in the cañons it is of course much greater. Except by the aid of steam, up-stream navigation, in the strict sense of the word, on a large part of the Stikine is impossible. Poling or tracking must be resorted to to surmount the obstacles, and this, for satisfactory progress, requires a large party and a stout tracking-line fifty to one hundred fathoms long. The river is seldom over two cables and a half in width.

Vancouver's parties did not recognize the existence of a large river here. It was first discovered by the fur-traders. The sloop *Dragon*, Captain Cleveland, visited the Stikine delta in April, 1799, and in the journal of the ship *Eliza*, Captain Rowan, for the same year, we find the locality alluded to as "Stikin." According to a mistaken idea of Greenhow this existence of the river was first made public through Captain Wild, of the American ship *Atahualpa*, of Boston, in 1804, but the river referred to by Wild was the Naas and not the Stikine. The head-waters were first discovered by John McLeod, a trader from Liards River. It has been explored by various parties. A Russian party ascended to the mouth of the Iskoot, and their survey was mapped in 1853. Prospectors from British Columbia reached the head-waters some years later. In 1863 a party from the Russian corvette *Rynda*, accompanied by Professor Wm. P. Blake, ascended the river to a short distance beyond the Little Cañon. In the period from 1865 to 1867, inclusive, the officers and explorers of the Western Union Telegraph Expedition examined this river and every important tributary from its head-waters to the sea. The upper portion of the river, for business reasons, received the most attention, and but few astronomical observations were made, and these chiefly for latitude. A few astronomical observations on the lower part of the river were made by the *Rynda* party, but by some error or inadvertence of the draughtsman they are rendered unavailable from the evident displacement of the station mark on the chart. There is a complete absence of any topography on the river chart, which covers a distance of from twenty to twenty-five miles up stream. A sketch map, prepared independently by Professor Blake, is much more full and comprehensible, but is on a smaller scale and of course wants the hydrography. A sketch map affording some information (especially distances, said to be official) was published in 1874 by the *Mining Press* newspaper of San Francisco. The MS. maps of the Western Union Telegraph Expedition are by far the fullest and most satisfactory with regard to the interior. A map of the Cassiar mining district, published by authority in 1876, contains additional details; the last map noted is the survey by Mr. Hunter, already alluded to. No one of these maps is satisfactory, and they are all more or less discrepant with one another, especially in regard to distances.

In view of the importance of the gold mining on the upper Stikine a brief itinerary for the river is appended, though hardly warranted by its navigable facilities, and for the most part beyond the American boundary.

ITINERARY FOR THE STIKINE RIVER.

The port of entry is Wrangell, at Etolin Harbor, Wrangell Island, which has been previously described. Steamers from Portland, Oregon, transport passengers and goods to this point.

From Point Highfield, just north of Wrangell, the entrance of the Stikine channel at Rynda anchorage bears **N.** about three miles.

The bar at the mouth of this channel through the flats, according to various authorities, has from one and a half to two and a half feet upon it at low water, with a rise and fall of eighteen feet at full and change. It changes with the freshets. The bar has an axial width of a third of a mile in the direction of the stream.

From the outer edge of the bar to the southern mouth of the river proper is five and a half miles in a generally **NW.** by **N.** direction. The depth in the channel varies from six fathoms to seven and a half feet at the river mouth, where a second bar exists. The width of the channel between the one-fathom curves is from a quarter to half a mile. The eastern border of the channel lies a cable or less from the continental shore, which is apparently composed of banks rather than beaches, behind which the wooded land rises rather rapidly to bluffs of moderate height.

Within two miles of the entrance three unimportant points—**False or South Zelonoi** (Green) **Point**, **Zelonoi Point** proper, which is probably the Point Rothsay of Vancouver, and **Palonoi** (Fired) **Point**—are passed. The last two are only a third of a mile from one another. At Zelonoi Point the bluffs approach within their shortest distance of the shore. At the river mouth Point Rothsay of Hunter, on the eastern shore, is named by the Russians **Reechnoi** or **River Point**. This point and the southern entrance bear about **NE.** ¾ **E.** from Sergieff Island on the flats.

The next northern entrance is about two miles **NW.** by **N.** from the southern one, and opens into a bight over a mile in extent and much obstructed by lurking sand-bars, &c. **NW.** from this bight a high ridge or mountain rises, extending in a **N.** and **S.** direction and having a rather bluff top. To the eastward from this the delta region is flat. To the northward and westward other entrances or arms of the delta may exist, but this region does not appear to have been explored.

As the southern mouth of the delta offers the best known facilities, a further reference to the other channels seems unnecessary. The accompanying chart is known to be considerably in error in regard to the delta but there are no data for rectifying it.

The bar at the southern mouth is short and carries two to five feet at low water. Beyond this the depth increases to ten or twenty feet. The river trends more to the eastward as do the bluffs behind the margin, and the width of the low lands between the bluffs and the river increases. The bluffs or hills attain an altitude of fifteen hundred feet or more, and the flat portion of the delta appears three or four miles wide.

About five miles above the delta islands the valley narrows and the river appears only two or three hundred feet in width. The depth in the channel to this point is nowhere less than seven and will average over twelve feet. The appearance of the high land on either side is as if ranges trending **NW.** and **SE.** were abutting obliquely upon the river.

A few miles above, on the north bank, a stream called the **Soynai** or **Ice-water River** flows in from a glacier a mile or two to the westward. A small steamer carries tourists from Wrangell to this glacier and returns the same day. The low alluvial point between the Soynai and the Stikine is composed of river-drift and is stated to afford gold.

Above this for several miles the course of the Stikine is nearly **E.** and **W.**, without rapids. There are some sand-bars or islands on the south side of the river, and the valley in which it flows becomes wider, the river banks low, and the northern mountains recede to the northwest. At a distance (*vide* Blake, *l. c.*) of five and a half miles from the Soynai the Stikine turns suddenly to the **N.** and then to the **NW.** At the convexity of the curve granitic mountains rise abruptly from the water. Between the mountains and the river on the north side of the bend is a considerable gravelly flat, overgrown with willows and shrubbery. Between this point and the sea the current varies from two and a half knots to three and a half knots per hour. The difficulty experienced in reconciling different accounts will be understood when it is remembered that Professor Blake and most other map-makers put this bend about fifteen miles from the delta; yet according to the *Rynda* hydrographic sketch the distance is but seven miles.

The flat above mentioned is terminated by a rocky point, called by the Indians **Kokaydai**. Professor Blake refers to this as a good locality for a settlement or station, as there is a good landing and its height secures immunity from floods. Directly beyond and nearly opposite to this point is the valley of the **Skoot or Iskoot River**, extending to the eastward. This is a large stream, navigable by canoes, and entering the Stikine apparently by several mouths. The Skoot extends to the eastward about fifty-five miles, when it bends to the northward, receiving at the angle thus formed a tributary, the **Nin-kun-saw**, which flows from the southward and eastward a distance of over twenty miles. At the summit, where the head-waters of this branch are intimately associated with those of the Naas River, the elevation attained is twenty-six hundred feet. By ascending the Skoot and making the portage the Stikine Indians can descend the Naas River and reach Fort Simpson in six days after setting out.

The extent of the great bend of the Stikine is variously estimated at from two to four miles. Above it the general course of the river is **NW.** by **N.** ¼ **N.** to the mouth of the **Little Cañon**. In the bend the depth is from seven to twenty-four feet (May), and the current reaches four and a half knots per hour.

A short distance above the mouth of the Skoot is the first village or camp of the Tinneh Indians of the interior, as distinguished from the T'linkits or Kaloshians of the coast. In the same vicinity, on the western bank, a fine glacier extends far back among the hills, and has a width of a mile or more parallel with the axis of the river. To the eastward, some distance behind the hills adjacent to the river, a high serrated range of sharp peaks is visible. The miners term the rugged region of this vicinity the **Glacier Mountains**. The *Mining Press* sketch indicates the boundary line as being about half way between these mountains and the Little Cañon, or about sixty-five miles from Fort Wrangell. Until more exact data are obtained this must remain in doubt. A Hudson Bay Company's post is situated on the British side of the supposed boundary.

For the remainder of the distance covered by the *Rynda* chart it appears that at that season a six or seven-foot channel might be counted on with tolerable certainty. Above the bend the current

increases in velocity, attaining in some places a rate of six knots per hour. As nearly as they can be correlated, this distance would seem to reach to Blake's Camp VI, eleven miles or thereabouts by the Russian determinations, or about twenty-five miles from the mouth of the river.

The approach of the Little Cañon is marked by Cone Mountain, a regular and conspicuous peak on the eastern bank. The cañon itself is less than a mile long, and here the whole stream is compressed in a narrow rocky gorge. On the north side, for a part of the way, an eddy or counter-current exists, which may be of assistance in ascending this part of the river.

Above the cañon the river is much wider and flows quietly between terraced banks. A short distance above is a rapid, where a portion of the river is obstructed by rocks and boulders. This was named the **Sergieff Rapid** by the *Rynda* party, who lost a man of that name at this point by drowning. It may be the "Kloochman Cañon" of the miners. According to the Western Union map it is about fifty miles from the Little Cañon to the mouth of the Great Cañon and the head of steam navigation. About thirty-eight miles from Little Cañon the Dominion Government has established a reservation for government purposes, upon which reservation is a house for the local officers. Six or seven miles above is **Buck's Bar**, a celebrated locality for placer mining, and five miles or so farther is the mouth of the Great Cañon. Here is a Hudson Bay Company's trading post and some miners' and Indian camps. The cañon is in many places very narrow—indeed is for the greater part of its length navigable for no craft whatever, and is avoided by the natives and miners, who take to trails entirely away from the river, whose branches are crossed by suspension bridges of Indian invention and construction. The mining is chiefly carried on in the region of the head-waters of the river and the localities change to some extent annually. Notwithstanding the severity of the temperature, miners frequently travel to the different camps on the ice or over the snow in winter. The distance from Buck's Bar to the shore near Wrangell has been made on foot in three and a half days in the month of March. The entire distance from Dease Lake, by the miner's trail to Buck's Bar and thence on the river ice to the south edge of the delta has been made on foot in eleven days.

Next in order of consideration are the

MITKOFF AND ASSOCIATED ISLANDS,

separated by the following

STRAITS LEADING NORTHWARD FROM SUMNER STRAIT.

That which is nearest to the continent is Dry or Soukhoi Strait of the Russians, otherwise known as that part of Frederick Sound of Vancouver which extends between Mitkoff Island and the mainland, including the flats of the Stikine delta. This strait extends from Point Blaquiere about fifteen miles in a **NW. ¼ W.** direction with an average width of less than three miles, whence it trends more to the westward for some four miles to its junction with the eastern portion of Frederick Sound. The continental shore of this strait is very imperfectly known. Northwestward from Point Blaquiere an anchorage is indicated by Russian authorities in a small bay or cove, the headlands of which appear to extend in the form of reefs somewhat less than a mile in a northerly direction, the anchorage being placed between these reefs. The track of the Russian traders is indicated on the Russian hydrographic charts over the Stikine flats, showing that light-draught vessels at least have made use of the passage in the past, and it is quite possible that a careful survey might develop a practicable channel which would meet the needs of traders at the present time. Meade examined this region in 1869, and says he found the strait impassable for vessels of over four feet draught owing to the shifting sands which everywhere obstruct it. No information is on record in regard to the depth of water in the northwestern part of the strait, but it is beyond question that sundry large glaciers exist upon its continental shore and that at times its waters are more or less incommoded by floating ice broken off from them.

Dry or Soukhoi Strait.

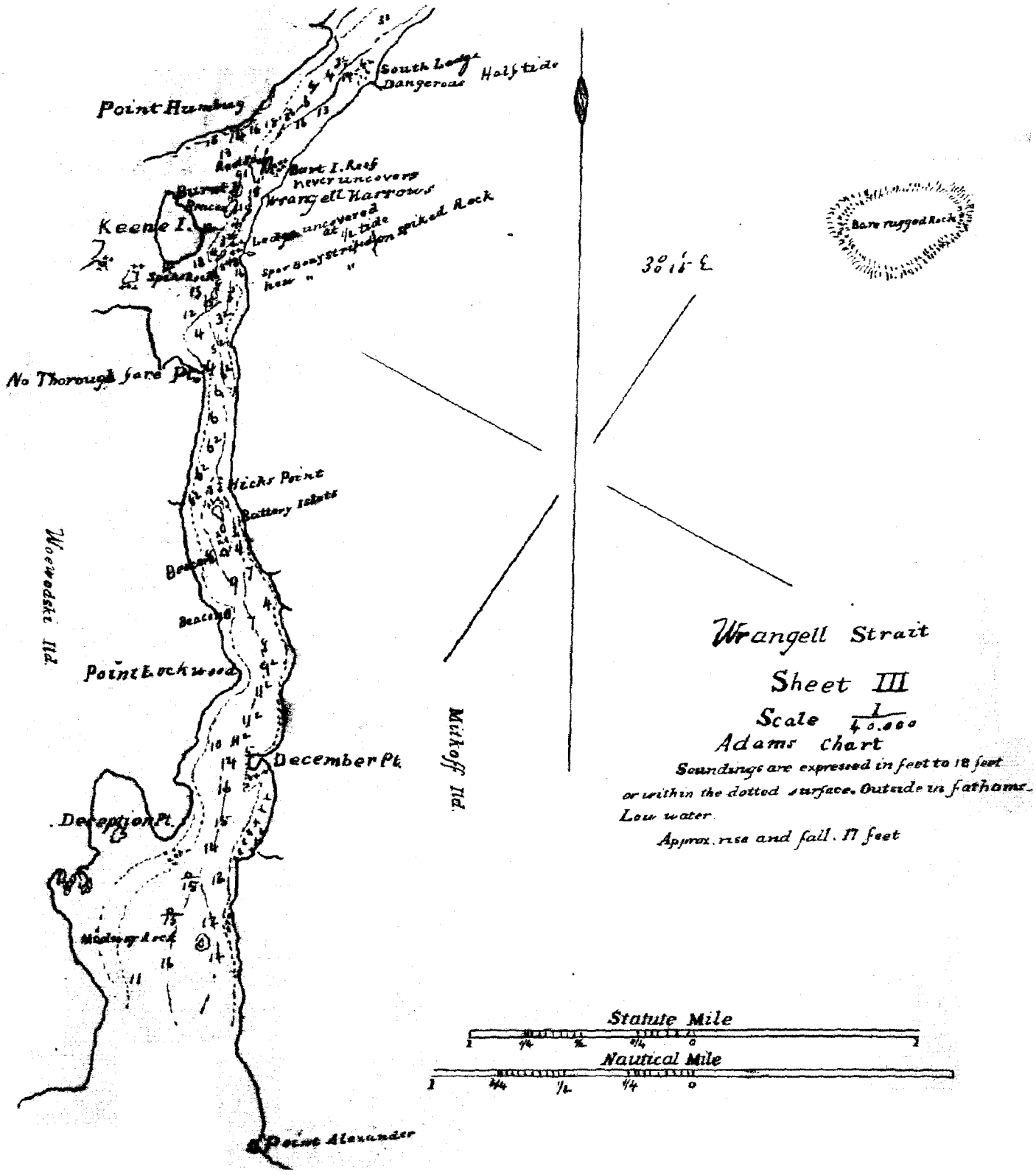
Westward from Vank Island, in about latitude 56° 32′ **N.**, on the southeastern shore of Mitkoff Island, is an opening with several islets about it called Blind Passage. Tebienkoff's sketch would indicate that the greater part of this passage, if so it may be called, is dry at low water, or even that a part of it is shoal enough to make a portage necessary at ordinary high water. At all events it is not navigable for vessels, if at all, and is supposed to extend in a northwesterly direction from its southern entrance toward Wrangell Strait. There immediately north of Anchor Point is a wide opening entirely dry at low water, with a high-water island covered with trees in its middle part, which is alleged to be the northern extreme of Blind Passage.

Not right does not connect with Wrangell Strait N. B.

Blind Passage.

WRANGELL STRAIT.

The next navigable passage northward from Sumner Strait is Wrangell Strait, named and first surveyed by the Russians. It was entered by one of Vancouver's boat parties, but reported by them to be impassable on account of shoal water and in fact to terminate in a cul-de-sac.


Point Hamburg
South Ledge
Dangerous
Half tide
Burnt I. Reef
never uncovers
Wrangell Harrows
Keene I.
Ledge uncovered
at ½ tide
Spar Buoy
Spar Buoy
Spar Buoy
Spiked Rock
No Thoroughfare Pt.
Hicks Point
Battery Islets
Beacon
Beacon
Woewodski Ild
Point Lockwood
December Pt.
Deception Pt.
Mudway Rock
Pearce Alexander
Mitkof Ild
30° 15' E
Bare rugged Rock
Wrangell Strait
Sheet III
Scale 1/40.000
Adams Chart
Soundings are expressed in feet to 18 feet
or within the dotted surface. Outside in fathoms
Low water
Approx. rise and fall. 17 feet
Statute Mile
1 1/4 1/2 1/4 0 1
Nautical Mile
1 3/4 1/2 1/4 0

See Coghlan directions

The entrance is situated between **Point Alexander** and a projection of Woewodski Island, distant about one mile in a **SW.** direction. Thence the strait extends about nineteen miles in a generally **NW.** by **N.** direction to Frederick Sound.

The position of Point Alexander is differently stated by the authorities.* The latest observations place it in about

Latitude ..... 56° 31′.0 **N.**
Longitude ..... 132° 57′.1 **W.**

Northward from Point Alexander the channel averages half a mile wide at high water.

Off the southern part of Point Alexander *the ground is foul* and the point should not be approached nearer than three cables. A short distance **NW.** from Point Alexander lies *Midway Rock*,† in the middle of the channel. It is usually dry, but at extreme spring tides is sometimes awash. There is deep water close to it on either side. **NW. ¾ W.** three-quarters of a mile from the rock is **Point Deception**, the northern point of a small cove from which *rocky ground* extends two and a half cables **S SE.** Five-eighths of a mile **N.** by **E. ¾ E.** from Point Deception, on the eastern shore, is a small peninsula, named by Meade **December Point**,‡ from the southern angle of which *a reef* extends a cable and a half in a **S SE.** direction in front of a small shallow cove. ***Midway Rock.***

On December Point the observation spot of the naval observers of the *Hassler* was situated. The observations make it in §

Latitude ..... 56° 32′ 33″.5 **N.**
Longitude ..... 132° 57′ 06″.0 **W.**

There is a good anchorage **NW.** by **N.**, half a mile from the north side of December Point, in eleven and a quarter fathoms, hard bottom.

NW. ½ W., half a mile from December Point, on the opposite shore, is **Point Lockwood**‖ of Meade, above which the channel widens somewhat. Anchorage may be had northwest from Point Lockwood, December Point being just shut in to the southeastward. **NW. ½ N.** three-quarters of a mile from Point Lockwood are the **Battery Islets**,¶ three in number, trending with the channel, with *foul ground* between them and extending a short way northwestward and southeastward from them. The northern islet is the largest and has several trees on it; the others have only grass and bushes. There is a clear channel on either side; the best is that on the western side of these islets. On the western shore, opposite South Battery Islet, *a reef* makes off about fifty yards. **Hicks Point** of Meade lies immediately north from the northern islets on the eastern shore; from its extreme *a reef* makes off to the distance of half a cable. From this locality northward the channel is wide and clear for nearly two miles.

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* British Admiralty Chart 2431, corrected to June, 1882, gives,

Latitude ..... 56° 34′ 30″ **N.**
Longitude ..... 132° 52′ 00″ **W.**,

U. S. Hydrographic Office chart No. 225, edition of 1880,

Latitude ..... 56° 35′ 25″ **N.**
Longitude ..... 132° 58′ 12″ **W.**,

and the observations of the U. S. Naval officers on the *Hassler* in 1881, Coast Survey Harbor Chart No. 713, 1881,

Latitude ..... 56° 28′ 46″ **N.**
Longitude ..... 132° 58′ 36″ **W.**

The several charts are very discrepant in this vicinity. Three plans of the strait have been published,—one by the Russian Hydrographic Office, No. 1441, in 1850, from surveys by Lindenberg in about 1838, and one by the U. S. Hydrographic Office, subsketch on No. 225, in 1869, from a reconnaissance made by Messrs. Bridge, Pillsbury and Schroeder, of the U. S. S. *Saginaw*, R. W. Meade, jr., commanding, on March 20 and 21, 1869. A third, No. 713, above mentioned, has recently been issued by the U. S. Coast Survey from a reconnaissance made by the naval officers on the U. S. Coast Survey steamer *Hassler* in 1881. This contains numerous important additions and corrections, and together with notes submitted by Lieut.-Commander H. E. Nichols, U. S. N., commanding, has formed the basis of the following description. It must be borne in mind, however, that a thorough and final survey is yet to be made. Rev 1884 by offer of Lt. J. Adams

† *Polivnoi Rock* of Lindenberg.

‡ **Zelenoi Point** of Lindenberg.

§ Meade placed it two miles north of Point Alexander, in latitude 56° 37′ 25″ N., in 1869; Nichols, in 1881, in latitude 56° 30′ 16″ N. All agree that it is within a mile or so of the same meridian as Point Alexander; but this meridian varies according to different authorities from 132° 51′ W. to 132° 58′ 36″ W.

‖ **Povorotni (Turning) Point** of Lindenberg.

¶ Named by Lindenberg; called **Clear Islands** on U. S. Hydrographic Office Chart No. 225, subsketch.

NW. ½ W. a mile and a half from the northern Battery Islet is **No-thoroughfare Point** of Meade, northward of which is a *shoal and foul opening* six cables wide, which extends to the westward, where it divides, one arm turning abruptly south, forming **Inlet Point**, the other continuing northwest and west on the northern side of an island or point of land not yet surveyed.

This entrance is the eastern entrance of **Duncan Passage**, unsurveyed, named by Meade, and leading to Duncan Canal. The northern point of entrance to this passage is **Hood Point** of Meade. Opposite, and **NE.** from the entrance, is **Keene Island**, somewhat over half a mile in extent and heavily wooded. **SW.** from it there are some other islands in the entrance.

E. by N. from the southeastern end of Keene Island three-eighths of a mile, (just east from the eastern three-fathom line on the Coast Survey sketch of 1881, No. 713, *on which the rock is not laid down*,) in line with a very tall dead pine on the east shore, is a *dangerous rock*, nearly in the middle of the apparent water-way between Keene Island and the Mitkoff Shore. There is water enough for most vessels on each side of it, but the proper channel lies west from it. It has only about one foot water on it at low tide and is steep-to from the west.

Spike Rock.

RANGE TO CLEAR SPIKE ROCK.

The range adopted by the mail steamers for clearing this rock is Point Hicks in range with Point Lockwood, which passes west from the rock clear of it.*

Opposite Keene Island the eastern shore is foul to the distance of a cable.

North of Keene Island is a narrow channel with two fathoms or less water. This channel, leading in Duncan Passage, is termed **Keene Channel**, and does not appear as navigable on any of the older charts.

The shore **NW.** from it, from Hood Point a mile and a quarter **N. by E. ½ E.** to **Point Humbug** of Meade, is *foul with several rocks*. **N. ½ W.**, nearly a mile from the **SE.** extreme of Keene Island, is **Burnt Islet** of the Russians, Captain's Island of the U. S. Hydrographic sketch of Captain Meade's reconnaissance, a small wooded knoll, with *rocks* extending a short distance north from it, and south from it *a reef* and *foul ground* extending nearly two-thirds of the way toward Keene Island.

The channel usually followed lies between Burnt Islet and the shore to the eastward; it is very narrow between Burnt Islet reefs and the foul ground making off fifty yards from the Mitkoff Shore. The clear channel appears to be less than two cables in width. This locality is that commonly known to local navigators as **Wrangell Narrows.**

After passing Burnt Islet the Mitkoff shore, especially **NE. by E. ½ E.** from Point Humbug, fouls off to nearly a cable, forming *Burnt Islet Reef*. The Mitkoff shore continues foul for two miles and a half. About **N. ½ E.** a mile and a half from Burnt Islet is the dangerous *South Ledge*, which extends westward into the strait about a quarter of a mile, partly awash, and, like others previously mentioned, mostly dry at extreme low water. **N. ½ W.** three-quarters of a mile farther is *North Ledge*, equally dangerous. Nearly midway between these a white boulder on the Mitkoff shore is useful as a landmark.

Dangers.

Eastward from North Ledge is a little opening in the shore, bounded on the north by **Spruce Point** of Lindenberg—Point Schroeder of Meade.

On Meade's sketch a so-called Schroeder Channel is indicated eastward from these ledges; but later observations indicate no true channel here, and the locality should be avoided as unnavigable and dangerous.

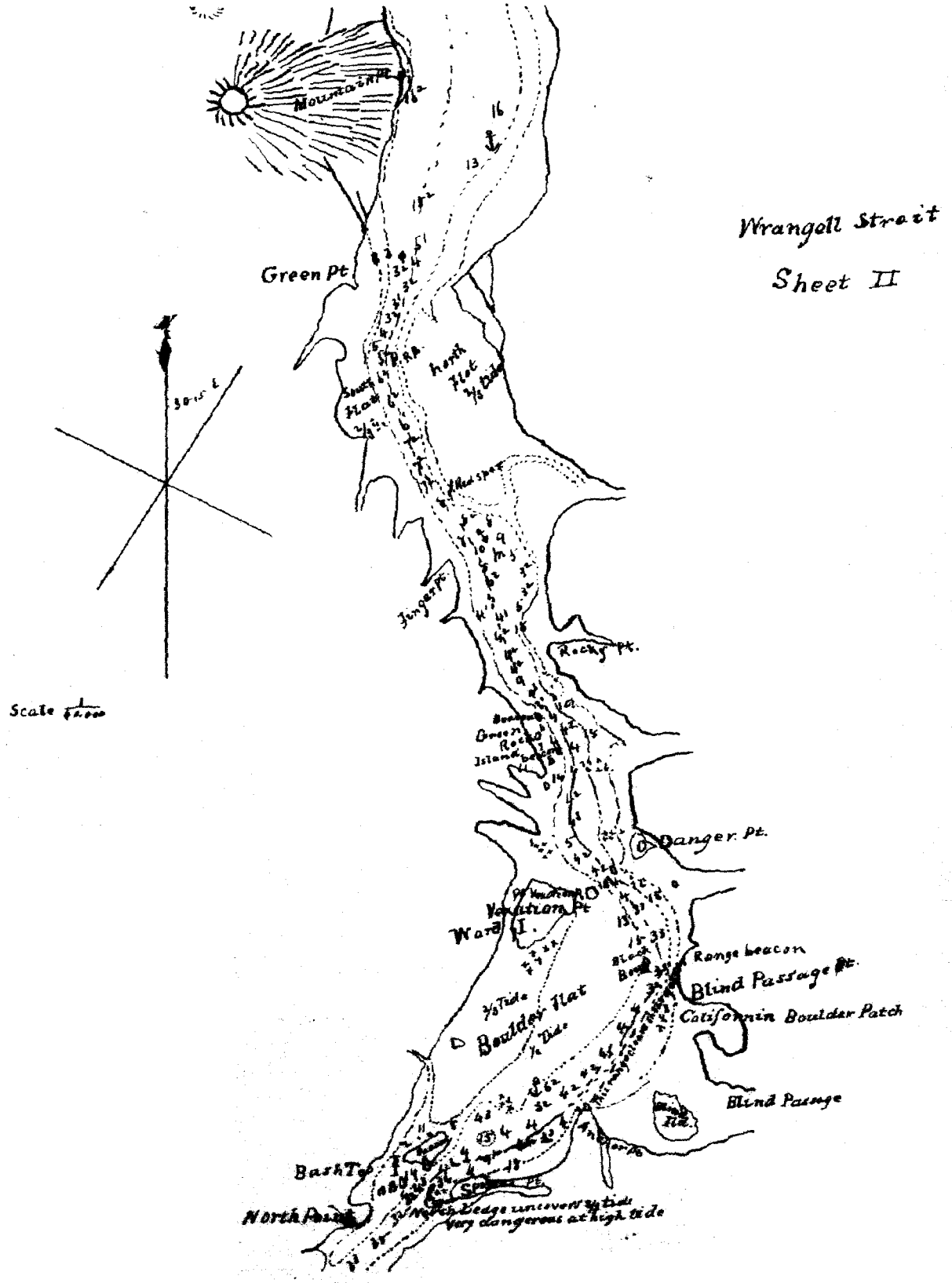
W. by S. ½ S. from Spruce Point, on the Kupreanoff shore, is **North Point**, northwestward from which is a small inlet. There is *a small ledge* at this point, and **N. by E. ½ E.** from North Point is a group of three islets—**Bush Top**† of Nichols being the largest, covered with bushes; **Grass Knoll**, smaller and grassy; and **Bare Islet**, smaller still. Northward from these *rocky ground*, bare at low water, extends a quarter of a mile. Around all this is a boat channel with less than three fathoms, but the ship channel lies to the eastward. Northward from North and Spruce points the straits widen to over a mile, but the shores are foul and dangers extend well out from them, especially from the Kupreanoff shore.

N NE. seven-eighths of a mile from Spruce Point is **Anchor Point** of Meade, and in the indentation between them is **Half Moon Anchorage** of Meade's sketch. This unimportant indentation dries well out at low water.

North from Bush Top Islet nearly a mile and a half, with a dry rock off it, is **Point Vexation** of Meade, the eastern extreme of an unsurveyed island called **Woody Island** by Lindenberg, southward from which and extending to the boat passage above mentioned and back to the western shore is

* This range is incompatible with any of the charts except that of Lindenberg; the others in this respect are believed to be in error.

† Golet of Lindenberg.


Wrangell Strait
Sheet II
Green Pt
Rocky Pt.
Danger Pt.
Range beacon
Blind Passage Pt.
Blind Passage
Boulder Flat
Boulder Patch
Bash Ty
North Pass
Scale

the extensive **Boulder Flat**, mostly bare at low water, with kelp outside of it. **SW.** by **W.** ½ **W.** from Anchor Point and about **NE.** from Bush Top Island is *a dangerous ledge*, showing *two rocks* at low water and marked by kelp at high water. The channel lies between this ledge and Anchor Point. North of Anchor Point is an extensive opening, wholly dry at low water, known as **Dry** or **Blind Passage**, and said to extend to Sumner Strait, where it opens **W NW.** from Vank Island. There is an island in the opening near Anchor Point called **Blind Island** by Nichols, and covered with trees; at low water it is connected by sand-bars with either shore. In the vicinity of Point Vexation there are several openings in the Kupreanoff shore, and it is not improbable that a number of islands exist here separated by narrow passages.*

One cable **NE.** from Point Vexation is *Danger Rock*, a black round-topped rock, awash only at extreme high water of spring tides. It forms the end of a reef extending from Point Vexation and continues beyond it **NE.** Fifty yards farther lies a dangerous sunken rock with four feet on it at ordinary low waters and about awash at extreme low-water springs. ***Danger Rocks.***

These rocks are not represented on the U. S. Coast Survey sketch No. 713, of 1881, but are in-shore from the three-fathom curve on that sketch.

N. by **E.** half a mile from Point Vexation is **Danger Point**, from which, beginning with a grassy islet, a reef two cables long extends toward Point Vexation. A great part of this reef is bare at low water.

At this point the channel is a short cable wide and requires circumspection in its use.

NW. from Danger Point is an unexplored opening, the northern head of which is **Rock Point**† of Meade, from which rocks extend off a cable and a half, marked by kelp and partly dry at low water. It is said that in this vicinity the northerly flood-tide from Sumner Strait and the southerly flood from Frederick Strait meet each other.

Southwest from Rock Point are two small, low, round-topped islets, the **Green Rocks** of Lindenberg, or **Fairway Rocks** of Meade. The northern one is grassy, the other nearly barren; they are connected by a reef nearly bare at low water, have a few rocks southeast a short distance from the southern one, and are separated by a narrow and shallow passage from the Kupreanoff shore. **NW.** by **W.** about half a mile from the northern Green Rock on the west shore is **Finger Point**, projecting to the northward, with a cove west from it, heavily wooded, with deep water close to its eastern edge. On the east shore a stream empties into a cove flowing in a west-northwesterly direction.

Hereabouts the shores on either hand assume a flat and rather low character, covered with a luxuriant growth of herbage. Simultaneously the channel is encroached upon on either side by *muddy* or *sandy shoals*, reaching two or three cables broad-off the shore, which extend along the channel for two miles or more, when the latter becomes gradually wider until it occupies the greater portion of the bed of the strait.

NW. ½ **W.** nearly a mile and a half from Finger Point, on the west side of the strait, is **Green Point**,‡ which at high water is an island having in it a clump of bright green trees in summer, very easily distinguished by the color. On the shore southeastward from Green Point is a boulder which marks a change in the direction of the channel. Up to about this point, going north, the channel has trended about **NW.** ½ **W.**, but when this boulder from mid-channel bears **SW.** by **S.** the channel turns to about **N NW.** with higher wooded land on each side and bolder shores.

NW. ½ **W.** from Green Point about a mile and a half is a peak about three thousand feet high, wooded, which comes down to the shore of the strait east from it, northward from which the Kupreanoff shore is tolerably free from shallows. Two miles and a half **NW.** by **N.** from Green Point is **Cove Point**, west from which the shore is indented nearly half a mile **NW.** by **N.** ½ **N.** about four miles from Green Point is **Blunt (Tupoi) Point** of Lindenberg, Cone Point of Meade, rather low and wooded. **SE.** by **E.** from it is an indentation of the shore occupied by *foul ground* and marked by kelp. Westward from Blunt Point is a small shallow opening, the northern point of which was called **Bayou Point** by Meade. Here is a short reef, and the Kupreanoff shore northward from that point is more or less *foul*. Northward from Blunt Point the channel turns more to the northward, and at a distance from Blunt Point of about a mile and a quarter is **Turn Point** of Nichols, off which rocks extend nearly two cables, beyond which to the entrance the Mitkoff shore is *foul*. **NW.** by **W.**, opposite Turn Point, is the entrance to a lagoon which dries at low water. Just south from Turn Point in the shore is a prominent boulder. About **N.** ½ **W.** a mile and three-quarters from this boulder is the **NW.** point of entrance to Wrangell Strait, **Prolewy (Straits) Point** of Lindenberg, "Proliva" of Meade's sketch.

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* On most general charts, including Russian Hydrographic No. 1494, and British Admiralty No. 2431, the eastern end of Duncan Passage is represented as opening upon Wrangell Strait at this locality; an error corrected in the local reconnaissance of Lindenberg and Meade.

† Shallow (Mikis) Point of Lindenberg.

‡ Point Matt of Lindenberg.

A reef extends **N NE.** a cable and a half, dry at low water; and off the point about one-third of the way toward the eastern point of entrance is *Middle Rock* of Meade, probably awash at high water. The channel passes eastward from it. The northern entrance of Wrangell Strait is about a third of a mile wide between reefs; the channel somewhat over a cable and a half clear. According to the latest data* Prolewy Point should be in about

Latitude ..... **56° 50′ N.**
Longitude ..... **132° 54′ W.**

In Wrangell Strait most of the dangers are uncovered at low water, and at high water are marked by kelp, which, however, probably disappears during the winter season.

In view from the northern entrance is the Patterson Glacier, which empties into Carlile Bay eastward from Point Agassiz, Frederick Sound. Pieces of ice derived from this and other glaciers are often seen floating about Frederick Sound and sometimes find their way into Wrangell Strait, but seldom reach southward of Green Point.

Most of the shores of Wrangell Strait are moderately high and thickly wooded. In the vicinity of Blind Passage the land is low but still wooded.

Anchorage may be found almost anywhere, but it is rendered uneasy by the tidal currents.

TIDES.

According to Nichols, the tides range from fifteen to eighteen feet extreme rise and fall, and at their height run about six knots. They meet in the vicinity of Finger Point. The least water in the strait at ordinary low water is about fifteen feet, but four fathoms may be carried through most of the way.

VARIATION OF THE COMPASS.

The variation of the compass in 1838, according to Lindenberg, was **26° E.**; in 1867 Meade records it as **28° 30′ E.** In 1881 it was about **29° 20′ E.**

The center of the South Ledge is marked by three white boards nailed to a tree on the east shore, visible from either direction. Several buoys were planted by the *Hassler*, but have probably been carried away.

In the present state of knowledge it is impossible to be more explicit with safety. The navigator here, as almost everywhere on these coasts, must make up for the defects of the charts by extra watchfulness and caution.

Russian Hydrographic Chart No. 1441 contains Lindenberg's reconnaissance chart. Meade's sketch is to be found on U. S. Hydrographic Office Chart No. 225. Neither is to be relied on. Indeed it would probably be better for the navigator to rely on his own eyes and good judgment, than to attempt to depend absolutely on either of these charts. In Harbor Chart No. 713 of the U. S. Coast Survey the results of Nichols' reconnaissance are given, and though not to be considered as a completed survey, it presents the best knowledge yet published of the strait north of Keene Island.

SAILING DIRECTIONS†

FOR WRANGELL STRAIT.

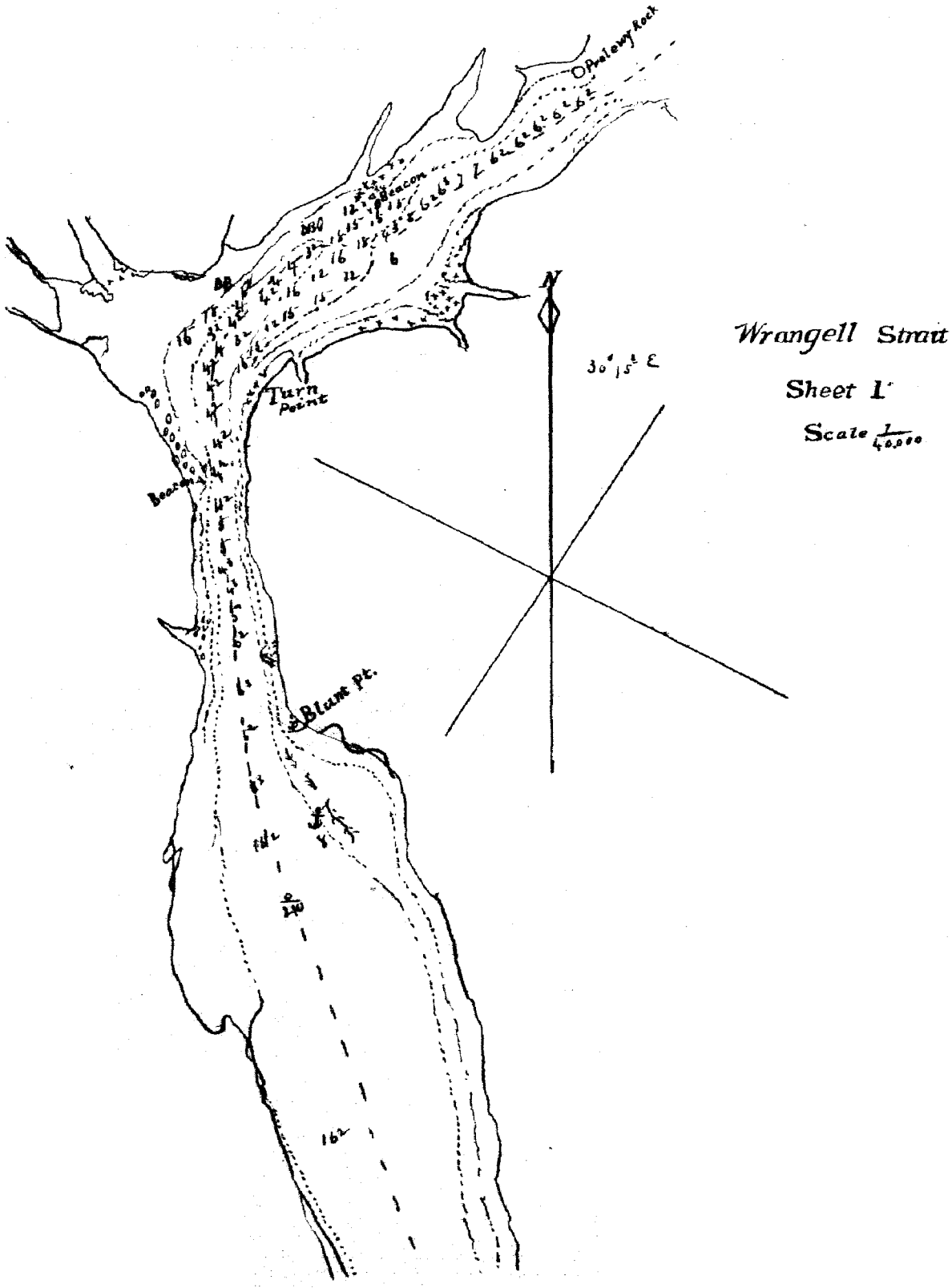
From the Southward.—In entering, the navigator should not approach Point Alexander within three cables,—the rocks near its southern point being thus avoided. The course passes to the eastward of Midway Rocks, which may be closely approached; except at extreme high water they are visible or marked by a small ripple.

Thence keep mid-channel course, passing westward of Battery Islets. Information received since the issue of the reconnaissance chart of Wrangell Strait is to the effect that the range for clearing Spike Rock westward from it, adopted by the mail steamers, is Point Hicks in range with Point Lockwood. This agrees with Lindenberg's chart, from which the direction would appear to be **NW. ¼ W.**, or nothing to the northward from that course, until (according to Nichols' sketch) Burnt Islet bears **N.** by **W. ½ W.**, with the southeast edge of Keene Island in one with Inlet Point bearing **SW.** by **S. ½ S.** This clears *Spike Rock*. Thence a slightly more westerly than mid-channel course **N. ½ W.** for Bush Top Islet until off *South Ledge* with the white boulder (on east shore north of *South Ledge*)

*According to Meade it is in

Latitude ..... **56° 52′.5 N.**
Longitude ..... **132° 52′.0 W.**

†Dependent on Nichols' notes and reconnaissance except where otherwise stated.



Wrangell Strait

Sheet 1'

Scale 1/40,000

bearing **NE.** by **E.** Thence **N.** ½ **E.**, when (Grass Knoll Islet bearing west) Spruce Point bearing **SSE.** should shut out North Ledge Point, when the course is **NE.** ½ **N.** for north edge of Anchor Point, avoiding *reef* on west side of channel.

When one cable off Anchor Point on this course bear away for Danger Point **N.** by **W.** until Green Point opens **NW.** ¾ **W.**, just eastward from the southernmost Green Rock, which leads clear between the rocks off Danger Point and the reef opposite. Pass eastward half a cable from Green Rocks and steer for Green Point under High Peak **NW.** ¾ **W.** When the boulder on the west shore southward from Green Point bears **SW.** by **S.** the course will be **N.** by **W.** half a mile, or until High Peak bears **W NW.** Thence in mid-channel until well past Turn Point, when follow the eastern shore at a cable distant.

From the Northward.—After passing Green Rocks a course south, Green Rock astern bearing **NW.** by **W.** and middle of Rugged Peak **SE.** by **E.**, until Anchor Point bears **S.** by **E.** ¾ **E.**, carries clear of Danger Point rocks.

Wrangell Strait is not considered a dangerous passage by Meade or Nichols; there are no short turns nor very bad tides, but a stranger should not attempt the passage except at low water, when nearly all the dangers are visible. The best stage of the tide to make the passage from either entrance is at a quarter flood.

KUIU AND ASSOCIATED ISLANDS.

The next western passage to Frederick Sound from Sumner Strait is that between Kupreanoff and Kuiu Islands, called by the Russians

Not yet explained or surveyed - & is not as fine as the best

KEKU STRAIT, [illegible]

a name derived from the local appellation of the T'linkit tribe of Indians which inhabit it.*

The southern entrance of this strait is situated in about latitude 56° 31′ **N.**, some two miles and a half to the northward from Conclusion Island, as previously mentioned.† From this vicinity the strait trends nearly **N.** by **W.** ½ **W.** for nine or ten miles with an average width of over a mile. At this point it turns sharply to the westward, expands to a width of two miles and a half, and so continues for eight or nine miles in a **NNW.** direction. Throughout the whole of this portion, and indeed the whole of its extent, the strait is greatly embarrassed by islets, rocks and foul ground. Little has been done in the way of exploration in this vicinity since the time of Vancouver. All existing charts are based upon his, and the obstructions appeared to his party so great as to render this strait wholly unavailable for navigation except in boats or canoes. A note on U. S. Hydrographic Chart No. 225 states that there is passage for small craft,‡ and it is by no means improbable that a navigable channel exists for vessels of modern draught, though the difficulties attendant on such navigation are likely to deter traders and others from making the attempt except in cases of necessity.

At the last-mentioned point the direction of the strait again changes, and an islet of more than average size lies in mid-channel. From this islet the general direction of the strait is **W.** ½ **N.** eight miles, and the width gradually increases from two miles to about three miles, with very broken and irregular shores.

At a distance from the aforesaid islet of four and a half miles in a **W.** by **S.** ½ **S.** direction is a point forming the northeastern headland of Port Camden of Vancouver. The opposite headland is distant about a mile and a half in a westerly direction. In the entrance are two islets, and, on the eastern side especially, a number of rocks. The course of this inlet for five miles is about **SE.** by **S.** ¼ **S.**, when it gives off a short rounded arm somewhat over a mile in extent in the same direction, while the main body of the inlet turns to southward,—terminating at a distance of some six and a half miles, and after forming some unimportant curves, in latitude 56° 38′.5 **N.** according to Vancouver. Here only a comparatively low and narrow isthmus separates it from another inlet which opens upon Chatham Strait. **Port Camden.**

Vancouver says, "The shores of the southern parts of this branch * * * are pretty free from islets and rocks, but those to the northwest of it are lined with them and render the approaching of it

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* It has been written **Kekou**, **Kiku** and **Kake Strait** by various authorities; the original Russian form has been adopted and is essentially that found on all the charts.

† See page 104.

‡ It is stated (in the Directory of Bering Sea and the coast of Alaska, issued by the Bureau of Navigation, U. S. N.) that fifteen feet of water may be carried through. In U. S. Hydrographic Notice No. 13, 1869, Meade reports that it is said that no vessel drawing more than four feet can pass through Keku Strait, but he doubts the truth of this. Later advices say that fifteen feet can be carried through at low water. The latter probably correct (H&N)

extremely dangerous." It is reported to the U. S. Coast Survey that coal was discovered May, 1868, in the rounded arm previously alluded to, in about

Latitude ..... **56° 42′ N.**
Longitude ..... **133° 51′ W.,**

according to British Admiralty Chart No. 2431. It is represented to occur in several small six-inch seams cropping out about twenty feet above low-water mark, and separated from each other by intervening hard strata twenty to fifty feet in thickness. The direction of the coal seams is nearly east and west, with a dip of 30° or 40° to the southward. According to the same report the entire beach is a formation of sandstone; the tide ranges about thirty feet; the harbor is perfectly safe, with good anchorage in six to fifteen fathoms, soft muddy bottom; and from the thickly wooded adjacent country numerous streams flow into the harbor.

So far as the material at hand affords a clue, it indicates that no special chart of Port Camden has up to this time been made public or has been urgently required. From the western headland of the port the shore curves to the westward for some twelve miles, terminating at Point Cornwallis, which forms the western headland of the large bay through which Keku Strait communicates with Frederick Sound.

The whole of this strip of shore is profusely studded with rocks and islets, which extend off the coast to a distance of several miles, and are sometimes known as the **Keku Islets**. From the western headland of Port Camden **N.** by **W.** about four miles lies the southern headland of Hamilton Bay, named by the U. S. Navy, and sometimes called **Hamilton Harbor**. Vancouver's party entered this inlet, and describe it as a mile wide and stretching five miles in an easterly direction. Two islets lie to the westward of but quite near to the southern headland, and two more at the mouth of a small cove just to the eastward, inside the northern headland. Little has been made public in relation to this bay. It is stated that "the chart exhibits the approaches as being difficult of navigation on account of islets and rocks," but that the navigation is "not so, at any rate for steamers."

Hamilton Bay.

The geographical position of the harbor, as determined by the U. S. S. *Saginaw*, is

Latitude ..... **56° 52′.8 N.**
Longitude ..... **133° 36′.0 W.**

A coal seam eighteen inches wide, of "good bituminous coal," is reported to have been discovered here in July, 1868. A large settlement of the Keku or Kake Indians was destroyed here by the United States authorities about the same date, and it is worthy of note that the native inhabitants of this vicinity have a very bad reputation and are unquestionably not to be trusted in the absence of a force sufficient to control them. Vancouver's party noted eight villages on the bay, some of them in ruins or deserted, and none inhabited at the time of his visit.

From the entrance of this bay to **Point Macartney**, the northeastern headland of the expanded northern portion of Keku Strait, the shore curves in a generally **NW.** by **W.** direction some seven or eight miles. It is broken by various minor indentations and guarded by a multitude of islets and rocks which extend off two or three miles. The width of this bay from Point Cornwallis to Point Macartney is about ten miles in a **NE.** by **N.** ¼ **N.** direction, and it would appear by the charts that more than two-thirds of the area to the southward and eastward of this line, between the shores of Kuiu and Kupreanoff islands, is thickly infested with obstacles or dangers to navigation.

Dangers.

CHATHAM STRAIT.

Returning once more to Cape Decision, Chatham Strait* is next in order.

For present purposes Chatham Strait will be considered as extending from Cape Decision to Point Couverden, where it divides into two branches. The western branch is now known as **Icy Strait**, while to the other, named by Vancouver **Lynn Canal**, the term "strait" is inapplicable.

As here considered, this strait has a length of one hundred and thirty-five miles in a **NW.** ¼ **N.** direction. Its greatest width is sixteen miles, at its southern entrance; it is contracted to two and three-quarters miles near Point Marsden. With these exceptions it is remarkably uniform, averaging about six miles in width during its entire extent. It is very deep, hardly any soundings being reported from

*This, the most extensive and remarkable of the inland highways of the Alexander Archipelago, was named by Vancouver, who included in it the strait which separates his **King George Third's Archipelago** from "the land to the eastward." This comprised also a part of what is generally known as Icy Strait. It was also called **Menzies' Straits** by the fur-traders as lately as 1799. The expanded portion at the southern extreme of Chatham Strait, including the waters northward of the Hazy and Coronation islands, was called **Christian Sound** by Colnett in 1789. To the same waters the name of **Chirikoff (Tschirikow) Bay** was given in 1786 by La Perouse, and **Ensenada del Principe** by Malaspina in 1791.

it, and there are but few dangers except those immediately adjacent to the land. The western shore of the strait was partially imperfectly surveyed by Vancouver, and but little has been done there since his time; hence, with the exception of its most general features and certain anchorages, this coast is as yet almost unknown in its details.

BARANOFF AND ASSOCIATED ISLANDS.

Cape Decision, forming the southwestern extreme of Sumner Strait, at the same time forms the southeastern extreme of Chatham Strait, whose opposite headland is **Cape Ommaney**, named by Colnett in 1789.* It is situated at the southern extremity of Baranoff Island, and according to Vancouver "constitutes a very remarkable promontory, that terminates in a high, bluff, rocky cliff, with a round, high, rocky islet lying close to it." By the shore "on its eastern side, taking a sharp northerly direction, it becomes a very narrow point of land."†

From its height, which has been estimated at a thousand feet, and especially from the height of the land to the northward of it, this cape is readily recognized, and is the most conspicuous portion of the land seen by vessels to the westward, bound for Sitka, when they make their usual landfall. This land to the northward of the cape was seen at a distance of forty-five miles by Vancouver when off Cape Addington. La Perouse placed Cape Ommaney in latitude 56° 11′ N., and Malaspina in 56° 09′.5 N. Its geographical position, according to Tebienkoff, is

Latitude	56° 10′.5 N.
Longitude	134° 28′.5 W.,

nearly agreeing with Vancouver's position. The islet near it was named **Wooden Islet** by Vancouver after one of his men, who was lost overboard in this vicinity.

Cape Decision bears from Cape Ommaney **E. ¼ N.** about nineteen miles.

The section of Chatham Strait to be first considered extends from Cape Decision to Point Kingsmill. From the former the coast of Kuiu Island trends nearly west for about three miles, then **NW. ¾ N.** eleven miles, to a rocky point which forms the northwestern extremity of a rocky peninsula. Between this point and the western angle of Cape Decision the shore is very irregular, "has in it many small open bays, and at some distance from it lie many rocks."‡ According to Vancouver's chart some of these rocks extend nearly two miles off shore into the strait.

From the rocky point above mentioned **NW.** by **N. ¾ N.** a mile and a half lies the southeastern headland of Port Malmesbury of Vancouver. This port has not been described by any other navigator, and no detailed survey was made by Vancouver. The general course of the port from the entrance is **N. ¾ E.** three miles, whence it turns abruptly to the **SE.** for three miles farther. The northwestern shores are very irregular and guarded by numerous rocks and islets, which extend, according to Vancouver's chart, about half way from that shore across the port toward the opposite shore. There are also some rocks or islets at the extreme head of the bay. The clear and navigable portion of the port is that along the **SE.** shore, and this varies from a mile to half a mile in width. A cove exists immediately **NE.** from the southeastern headland, which is represented as clear of rocks and well sheltered, but no soundings are recorded in it. Vancouver remarks, in relation to the port: It was "found free and easy of access by keeping near the southern shore;" the inner portion of the harbor "having some islets and rocks in it, notwithstanding which it affords very excellent shelter, with soundings from 17 to 34, and 12 fathoms water;" and "is conveniently situated to the ocean."

Port Malmesbury.

From the southeastern point of entrance the northern headland bears **NW.** by **W. ¼ W.** two miles according to Vancouver, who named this headland **Point Harris.**§ According to Vancouver this point is rendered very remarkable by being a (low) projecting point "on which is a single hill, appearing from many points of view like an island, with an islet and some rocks extending near a mile" to the **S.** and **SE.**

The geographical position of this point, according to Russian Hydrographic Chart No. 1494, is

Latitude	56° 17′.7 N.
Longitude	134° 14′.0 W.,

while other authorities place it in 134° 12′ or 134° 09′ W. longitude.

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* In 1786 La Perouse had named it **Cape Chirikoff** (**Tschirikow**), a name adopted by Sarycheff, but the account of his explorations in this vicinity was not published before the subsequent name had come into use. It was named **Punta Ceste de la Entrada del Principe** by Malaspina, **Menzies' Cape** by the traders, 1796–9, and **South Point** by Lisiansky in 1804.

† Vancouver, vol. iii, pp. 266–7.

‡ Vancouver, vol. iii, p. 286.

§ Which by transcription into Russian letters, an error in lettering and retranscription into English, appears on some charts as **Point Garur**.

From this point NW. by N. ½ N. three miles and a half lies the southern headland of a large open bay, which has been called Tebienkoff Bay by the U. S. Coast Survey in 1879. This bay is about nine miles in width at the entrance, the general course of the main stem being about E NE. for seven or eight miles. This divides into several ramifications, some of which reach within two miles of the eastern shores of Kuiu Island. One of these branches extends some sixteen miles in a N. ¾ E. direction from the southern headland of the bay, terminating in latitude 56° 33′ N. Another with a generally E SE. course terminates in latitude 56° 23′ N., eleven miles from the above headland in a NE. by E. ¼ E. direction. A third branch stretches E SE. and SE. by S. ½ S. to a point where it ends in about latitude 56° 15′ N. Since these inlets and bays have not been carefully surveyed, it seems better to defer a minute description of their intricacies until more is known about them. Almost the entire bay is occupied by innumerable islets and rocks. Only one Indian habitation was noted by Vancouver's party.

Tebienkoff Bay.

The northern headland of this bay, called by Vancouver Point Ellis, is situated nine miles NW. ¾ N. from the southern point of entrance before alluded to. The position of Point Ellis is believed to be

Latitude	56° 31′ N.
Longitude	134° 14′ W.,

the latitude being derived from Vancouver and the longitude taken from U. S. Hydrographic Chart No. 225. It appears to be of ordinary height, with some rocks about it, and forms the southeastern extreme of another large inlet which has not been named on the charts and which, from the abundance of rocks within it, has been called the Bay of Pillars. This bay has a generally NE. by N. direction with a width at the entrance of over seven miles. Its northeastern portion is divided by an irregularly wedge-shaped tongue of land into two principal ramifications with irregularly indented shores. The southeastern of these is a long narrow bay extending in a generally NE. by N. direction some ten miles from Point Ellis to a point where it terminates in a strip of low land, which separates it from the inner extreme of Port Camden by a distance of about a mile and a half, across which the natives are asserted to make canoe portages. The northwestern arm extends in the same direction as the other, to a point about six miles from the northern headland of the bay. The whole bay fairly bristles with islets and rocks. Those trending to the S SW. from the tongue which divides the two arms extend not less than three miles and a half from the shore and some of them, according to some authorities, actually pass outside of a chord joining the two headlands.

Bay of Pillars.

The northern headland is Point Sullivan, named by Vancouver, and bearing from Point Ellis NW. ¾ N. about seven and a half miles.

Two islets lie to the southeastward and two to the southwestward from the point, and there are numerous rocks, the whole within a radius of a mile from the extremity of the point. The shore-line to the E NE of the point is greatly indented and guarded by rocks and islets; to the northwest, on the contrary, the shores are less rocky and become firm and compact.

The geographical position of Point Sullivan appears, by a comparison of discrepant authorities, to be nearly

Latitude	56° 38′.0 N.
Longitude	134° 16′.5 W.

The longitude is doubtful to the extent of 3′.0.

Taking up the western shore of Chatham Strait N. by W. ¼ W., from Wooden Islet seven miles, a small islet forms the eastern headland of Port Conclusion, named and surveyed in detail by Vancouver in 1794. A point five-eighths of a mile E. by S. ¾ S. from the islet above mentioned is the "southern point of entrance" of Vancouver, from which his "opposite point," according to his chart, bears NW. by N. two and a half miles—the greatest depth on which line is seventy-five fathoms. There seems no reason, however, why Point Eliza does not constitute the real northwestern point of entrance, while the islet forms the southeastern headland, the two bearing reciprocally nearly NW. ½ N. and SE. ½ S. a mile and a quarter from each other. From this line, with an axial direction about due south, the port extends for a short distance of two and three-quarters miles to its termination. For about half this distance it has a width E. and W. of somewhat less than a mile; for the remainder of its extent it averages about a quarter of a mile in width. The depth of water in the middle of the port varies from eighty-seven fathoms near the entrance to twenty near its southern termination.

Port Conclusion.

These soundings appear to be rather irregular and the character of the bottom varies from stony to mud or sand. There is nowhere any impediment to its free navigation, though a few rocks exist close to the shores. S. by E. three-quarters of a mile from the islet is an open cove with a sandy beach and five to seven fathoms water.

S. ½ W. a mile and three-eighths from the same islet is the entrance to Ship Cove, where Vancouver moored his vessels. This is a very small cove, a cable wide NW. and SE., and about two cables long, with its entrance still further contracted by some rocks adjacent to the end of the point or spit which forms the cove. Within there is a depth of four or five fathoms, rocky bottom. It is necessary to moor here, and there is a small beach at the head of the cove. **Ship Cove.**

The shores are mostly steep and covered with a rather dense growth of spruce and other evergreen trees. Halibut were caught near the mouth of the port by Vancouver's party.

The geographical position of his astronomical station at the head of Ship Cove is

Latitude	56° 14′ 55″ N.
Longitude	134° 22′ 30″ W.,

and the variation of the compass, according to the most recent authorities, is about 29° easterly.

No information is accessible in regard to the tides, except that in Chatham Strait, in this vicinity, the flood invariably comes from the southward and runs about two hours.

Vancouver's survey has not been supplemented by any subsequent work. His original sketch of this vicinity has been copied or adopted by various Russian authorities, and by the U. S. Coast Survey in its Atlas of Harbor Charts. Tebienkoff's scale of miles represents one mile divided into quarters, but on his copy of Vancouver's sketch it has much the appearance of representing a total of four whole miles. On Russian Hydrographic Chart No. 1494 the longitude of Vancouver's Ship Cove is indicated as about 134° 34′ W., but on later charts either Tebienkoff's position, which is 134° 28′ W., or a position between the two has been adopted.*

The inner portion of Port Conclusion is separated only by a narrow isthmus from the head of Larch Bay, which opens to the Pacific. Ship Cove is likewise divided by an isthmus less than a quarter of a mile wide from Alexander Bay of Russian authorities, a small basin whose very contracted entrance is situated S. by E. ¾ E. from the islet at the entrance of Port Conclusion. It is only half a cable wide in a N. and S. direction, the northern headland consisting of a narrow rocky tongue. Within, the bay extends NW. by N. ¾ N. about a mile with irregular shores, especially to the north. The southern half has a width of about a quarter of a mile, while the northern portion is more contracted with some rocks in it and terminates in a sandy beach. The depth of water in the entrance is about four fathoms, in which kelp grows, and within the depth varies from three to eight fathoms. **Alexander Bay.**

Outside, to the northward of the entrance, is a small islet with some rocks. In regard to this basin Vancouver remarks: "The surrounding shores are generally steep and rocky, and were covered with wood nearly to the water's edge, but on the sides of the adjacent hills were some spots clear of trees and chiefly occupied by a damp, moist, moorish soil in which were several pools of water. The surface produced some berry bushes," and on the west side of the basin "were found a few deserted Indian habitations."

The northern headland of Port Conclusion, as herein regarded, was named by Vancouver **Point Eliza**, a rocky point, from which in a N NE. direction some islets and rocks extend for a short distance with deep water close to them. This point forms the southern headland of Port Armstrong of Vancouver, called **Armstrong Bay** on Tebienkoff's chart—another of those singular land-locked basins not uncommon in this region. The opposite headland is a small projecting point distant from Point Eliza about two cables N NE., of which distance about one-third is rendered unavailable by the rocks and islets on the southern side before alluded to. The northern shore appears to be steep-to. **Port Armstrong.**

The entrance to the basin is half a mile SW. ½ S. from the northern headland with a width of an eighth of a mile, which appears to be clear of obstructions. The shores of this passage are steep-to on both sides, and there is a clear navigable passage of eight to twelve fathoms in the middle and five fathoms near the shores. The basin itself from its mouth is about a mile long SW. ½ W. and four cables wide. The soundings are tolerably regular, from thirty in the middle to ten fathoms near the shores; the entire basin is free from any rocks or islets. Immediately within its north point is a sandy beach and a fine stream of fresh water, as is also the case at its head. Another beach lies just within its south point of entrance. In the vicinity of these beaches, especially about the entrance, "is a small extent of low land, but the other parts of the shores are composed of steep rugged cliffs on all sides, surrounded by a thick forest of pine trees which grew with more vigor there" † than about Port Conclusion.

The liability to strong and irregular tidal currents in the entrance, and to land-squalls or "woollies" from the high land about these basins, should be borne in mind by the navigator who may be tempted to make use of them in preference to less protected yet really more commodious bays which may be entered or left with almost any wind.

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* As Tebienkoff states that he copies from Vancouver, it would seem at least possible that the "28′" is a clerical error for "23′," the approximate value of Vancouver's position.

† Vancouver, vol. iii, page 269.

From the islet off Port Conclusion the western shore of Chatham Strait trends nearly **NW.** by **N.** ½ **N.** for some thirty-two miles. Within this space, especially within that portion included by the southern half of it, are a number of openings which have not yet been surveyed, as well as numerous smaller irregularities of the shore. Tebienkoff indicates that some of these openings are connected, by chains of lakes and streams through marshy, valleys with bays on the western slope of Baranoff Island or Archipelago.*

Returning to the vicinity of Point Sullivan, the shore of Kuiu Island trends thence about **NW.** ¾ **N.** thirteen miles to **Point Kingsmill**,† a conspicuous point, named by Vancouver, and forming the southwestern point of entrance into the spacious sheet of water known as

FREDERICK SOUND.‡

Its southwestern entrance, between Point Kingsmill and Point Gardner, is nearly ten miles wide **NW.** by **W.** and **SE.** by **E.** The sound is bounded to the westward by the shores of Admiralty Island between points Gardner and Gambier, a distance of thirty-four miles; to the northward and eastward, by the shores of the Continent from Point Windham to the mouth of Dry Strait, a distance of over forty miles; to the southward and eastward, by the shores of Kuiu and Kupreanoff islands for about sixty miles. Its general form is irregularly trilobate and its greatest width about fifteen miles. It is not known that any systematic soundings have ever been taken in it.§

Frederick Sound forms the third in order of the grand transverse valleys of plication of which Dixon Entrance, Sumner Strait and (as will be hereafter shown) Cross Sound with Icy Strait form the more conspicuous examples. The Frederick Sound plication fails, apparently, to cross the Baranoff Archipelago; but even here an unexplored opening and indications of low land traversing the island, as shown on some of the charts, are clearly a part of the same furrow and are continued in the same trend.

The shores of the sound are for the most part exceedingly irregular, and in the number of off-standing islets the sound contrasts very unfavorably for navigation with Chatham Strait.

From Point Kingsmill **Point Cornwallis** of Vancouver bears nearly **N.** by **E.** about six and a half miles. It is stated to be long, low, narrow and wooded, and, as previously mentioned, forms the northwestern extreme of Keku Strait. Between this point and Point Kingsmill lie two bays. Of these, Security Bay of Meade‖ is immediately to the eastward from Point Kingsmill, which forms its southwestern point of entrance, and from the northeastern angle of which, known as **Paralysis Point**,¶ **Round Islet** at the northern entrance bears about **N.** by **E.** ¼ **E.** one mile distant.

Security Bay.

Security Bay was first described by Meade,** who published a very imperfect sketch of it on U. S. Hydrographic Office Chart No. 225 (1869 and 1880). In 1881 the officers of the U. S. S. *Wachusett* on the Alaskan Station, Commander Henry Glass commanding, made a more thorough reconnaissance of the outer half of the bay, which was published by the U. S. Coast Survey as Harbor Chart No. 723. Upon this reconnaissance the following description and directions depend:

Between Paralysis Point and the southwestern angle of Point Kingsmill lies **Band Cove, unsurveyed**, about half a mile in extent **E SE.** and **W NW.**, of which the southwestern point of entrance is denoted **Hourigan Point**. From Paralysis Point the general direction of the southern shores of Security Bay is **SE.** by **E.** ½ **E.** two and a quarter miles to **Point Lookout** of Meade, where the bay contracts to less than a mile in width, beyond which it widens somewhat and extends about two miles farther in the same general direction.

The northern shore from Round Islet extends in a generally **SE.** by **E.** direction about six cables to **Cedar Point** of Meade, east from which a probably shallow bight makes in to the **NE.** Three quarters of a mile **SE.** ½ **E.** from Cedar Point is **Retaliation Point** of Meade, bluff, steep-to, and wooded, **E NE.** from which is **Cedar Bight**, part of which is shoal with some rocks in it, and the eastern extreme of which is formed by **Expedition Point** of Meade, low, wooded, **N.** by **E.** ½ **E.** from Point Lookout.

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* On a MS. chart the name of **Point Hoyt** is applied to the northern headland of one of these openings, in about latitude **56° 24′ N.**; and for the northern point of entrance to another opening situated in about latitude **56° 34′ N.**, the name of **Point Scott** is used,—both apparently without any explorations as a basis.

† Erroneously called **Kingenill** on Russian Hydrographic Chart No. **1494.**

‡ Named **Prince Frederick Sound** by Vancouver in **1794**, which title has been adopted by nearly all subsequent hydrographers. It has also been termed **Frederick Strait.**

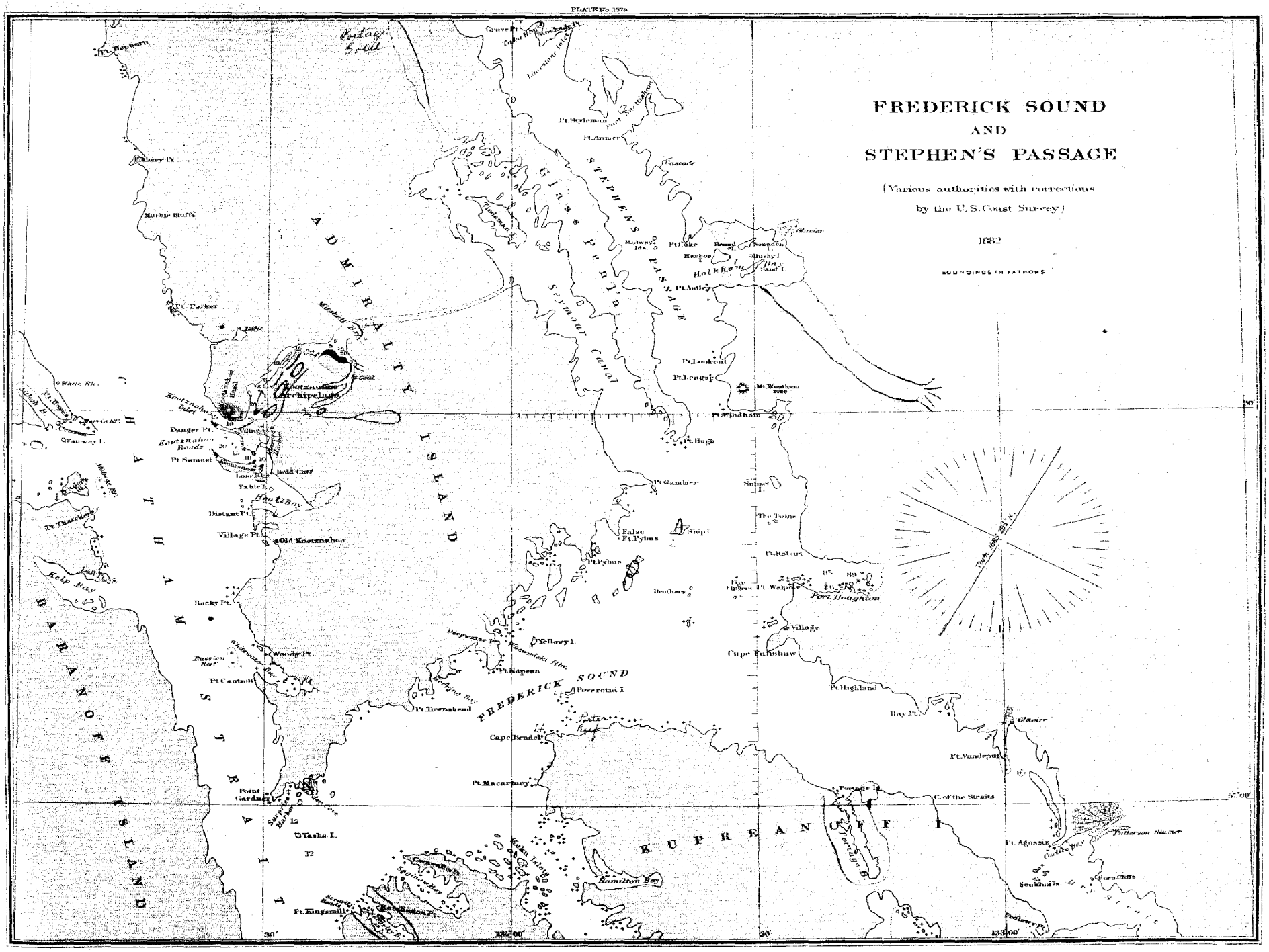
§ The older navigators seem to have applied the term *sound* to bodies of water of approximately equal length and breadth, or less elongated than a strait, especially if interspersed with islands, rather than with any reference to depth of water. After three-quarters of a century of usage it is, perhaps, unnecessary to alter such established names to suit any theory of the derivation of general terms.

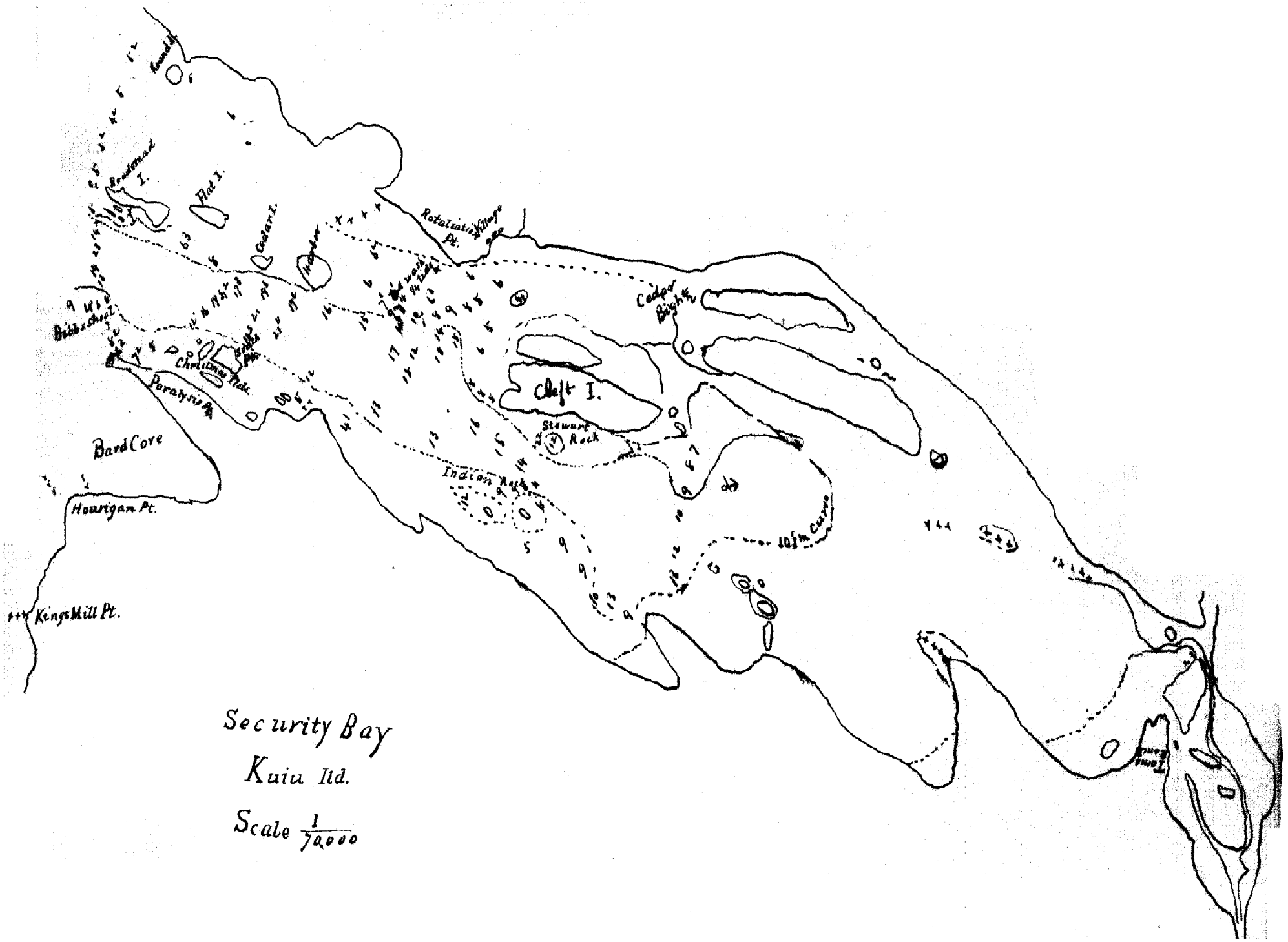
‖ Named by Meade on U. S. Hydrographic Office Chart No. 225 on account of its advantages.

¶ This is doubtless the original **South Point** of Meade, with the reef off it.

** U. S. N. Hydrographic Office, *Hydrographic Notice* No. 13, 1869, pp. 18–20.

PLATE No. 157a




Rondstead I.
Flat I.
Cedar I.
Jupiter
Rotaleaving Village Pt.
Cedar Bight
Bibbschoz
Christmas Ind.
Porayaro Pt.
Cleft I.
Stewart Rock
Bard Cove
Indian Rock
Hourigan Pt.
10 f/m Curve
Kings Mill Pt.
Security Bay
Kuiu Ild.
Scale 1/20000

S SE. three-eighths of a mile from Retaliation Point is the western end of **Cleft Island** of Meade, with a deep notch in it; the island extends south of Cedar Bight, with some rocks at its eastern extreme, about three-quarters of a mile in an easterly direction with a width of less than a quarter of a mile. Another islet, very narrow and about a quarter of a mile long, lies close to Cleft Island on its northern side, nearer the western end. The space between the western end of this island and Retaliation Point is about three cables, and midway is *a four-foot shoal* marked by kelp in summer. **N NW., S SE.** and eastward from this shoal, which does not appear on Meade's sketch, five or six fathoms may be had. About half a mile eastward from Paralysis Point, within the bay and extending **N NE.** from the southern shore about a quarter of a mile, is a group of six or eight small islands, the largest of which is bluff to the northward and southeast, about a cable and a half in extent, and named by the U. S. Navy **Christmas Island.** The smaller one next northwest from it was named **Cork Island.** The northeast angle of Christmas Island has been identified by the Wachusett's party with **South Point** of Meade, located by the latter approximately in

Latitude	**56° 52′ N.**
Longitude	**134° 20′ W.,**

a position probably belonging to Paralysis Point in reality.

N NW. a quarter of a mile from Paralysis Point is *Bibb Shoal,* marked by kelp, upon which four and a half fathoms are recorded though there may be less. Nearly midway between Paralysis Point and Round Islet is the small **Roadstead Island** of Meade, wooded, with *some rocks* about it; **W NW.** from which Meade indicates anchorage in ten fathoms under the name of **Security Roads.**

From Roadstead Island in a general direction **E.** by **S.** ½ **S.** toward the northwestern end of Cleft Island trends a series of small islands, which are very erroneously laid down on Meade's sketch of 1869. North and northeast from these the bay is reported shoal. These are, in their order, eastward from Roadstead Island, **Flat, Cedar** and **Harbor islands,** all wooded, the last the largest, and *a rock awash* at a quarter flood at a quarter of a mile **E.** by **S.** from the eastern end of Harbor Island and nearly half way from it to Retaliation Point.

Northeastward from Retaliation Point is a sand beach, where a stream comes in. Here was a small village of the Kehk or Keku T'linkets, called "Tom's Ranche," which was destroyed by Meade in the U. S. S. *Saginaw,* in 1869, in retaliation for two atrocious murders committed by the tribe on white men. At the same time, in the unsurveyed part of the bay eastward from Point Lookout, a fishing village on the south shore and two Indian stockaded forts at the head of the bay were also demolished.

Security Bay is spoken of by Meade as "immeasurably superior to anything I have yet seen in Alaska," being only forty-two miles distant from the ocean at Cape Ommaney, with a fine clear channel all the way, a good roadstead outside and a clear channel inside of the harbor, so that no pilot is needed abundance of pure water and excellent timber, a profusion of salmon in their season, and a land-locked, perfectly secure anchorage, with good soft holding-ground. ~~It is probable that~~ some of the natives have returned to this locality, where there was considerable cleared land about Tom's Ranche, where they dry salmon and raise potatoes.

TIDES.

The tides in this vicinity rise about fourteen feet. The soundings in the Coast Survey Chart No. 723 are reduced to approximate low water.

The variation of the compass is believed to be about 29° easterly.

SAILING DIRECTIONS

FOR SECURITY BAY.

Rounding Point Kingsmill, the shore should not be approached nearer than half a mile to avoid rocks or reefs and the *Bibb Shoal.*

When up with Roadstead Island bearing **NE.** two cables, the course in will be **E.** by **S.** ½ **S.** for the cleft in the western end of Cleft Island.

When the **SE.** edge of Retaliation Point bears **NE.,** anchorage may be had in fifteen to seventeen fathoms, soft bottom, or the navigator may lay a course to pass either north or south of the *four-foot shoal,* and anchor in five or six fathoms in the western part of Cedar Bight.*

* It is to be distinctly noted that the entrance to this bay *is much clearer than Meade's sketch would indicate,* which sketch, indeed, does not agree with his description above cited, and was hastily prepared by a subordinate officer. On the other hand, almost exactly where Meade locates his **Snug Harbor anchorage** the *Wachusett* reconnaissance shows the *four-foot shoal.*

The land southwest from Security Bay, forming the backbone of Point Kingsmill, is composed of high mountains; other land about the bay is high, as near Cedar Point, but part of the shores are moderately low. Security Bay was formerly a favorite resort of the Hudson Bay Company's and other trading vessels in their voyages through this archipelago, but no chart except the reconnaissance mentioned appears to have been made.

The channel into the eastern part of the bay, between Cleft Island and **Indian Rock**, appears to be clear, but in default of more information a description is not attempted. Meade's officers reported six or eight fathoms carried to within a mile of the head, when it suddenly shoals to less than two fathoms, and this part is infested by numerous visible rocks or small islets.

From Point Kingsmill **NW.** by **W.** ¼ **W.** about six miles lies **Yasha Island**, named by the Russians, wooded and quite prominent, with a clear passage on either side of it. It is said that this island stands on a ridge, bar, submarine spit or moraine, which extends clear across the entrance to Frederick Sound with twelve fathoms of water on it.

Submarine Bar.

N. by **E.** ½ **E.** four miles from Point Kingsmill lies the southern headland of Saginaw Bay, named by the U. S. Navy in 1869. The northern headland is formed by Point Cornwallis, distant from the southern point **N.** ¾ **W.** about two miles and a half. This bay is about five and a half miles long **E.** and **W.** and two miles wide **N.** and **S.**,—the northern shore being irregularly indented. Between Security Bay and Saginaw Bay the shore is guarded by rocks which extend seaward about a mile, mostly visible. From Point Cornwallis an arc described with a radius of a mile appears to include nearly all the off-shore rocks of that vicinity.

Saginaw Bay.

No detailed chart or sketch of this bay appears to have been made public; the bay on the general charts is represented as much obstructed by rocks both at and about the entrance and also within. If the charts are even tolerably accurate, Vancouver's description of the bay as filled "with many islets and dangerous rocks" is fully warranted. It is, however, reported that a safe anchorage exists in this bay one and a half miles within Point Cornwallis, on the northern shore, nearly "abreast of the Indian village, both east and west," over muddy bottom, in seven to eleven fathoms. It is stated that "though open to the northwest the anchorage is completely sheltered," is easily found, and is accessible to sailing vessels or steamers with fair or head winds. There is said to be room for a dozen large vessels. The Indian village is not represented on any of the charts, but it is said that the *Saginaw* found its geographical position to be

Dangers.

Latitude ---------- **56° 55′.5 N.**
Longitude ---------- **134° 10′.5 W.,**

by which it would appear to be situated on a narrow point, in which case the obscure expression previously quoted may mean that there is anchorage either east or west from this point abreast of the village. This anchorage has been called **Halleck* Harbor** by the U. S. Navy. In the absence of any sketch of the entrance it is hardly necessary to call attention to the need of great caution in entering the bay.

SAILING DIRECTIONS

FOR ENTERING SAGINAW BAY.

"In entering keep the port or eastern head of the bay aboard, say a quarter of a mile distant, until you reach the bold bluff point of the northern side of the anchorage, when steer for the ruins of the settlement, and anchor when you get eight fathoms."†

Great numbers of codfish are reported about the bay, and at one time the establishment here of a United States military post was contemplated.

The northern headland is Point Cornwallis, and within a radius of a mile from its extremity there are several rocks.

About ten miles **NE.** by **N.** ¼ **N.** from this headland lies **Point Macartney** of Vancouver, the **NE.** extreme of this part of Keku Strait. It is described by Vancouver as a "large, rounding, though not lofty promontory, in which were several small open bays, and near it several rocks."‡

From this point, according to the latest charts, the coast trends in a **N NW.** direction about four miles to a promontory, which has been named **Cape Bendel**,§ from whence Point Napean bears **W NW.**

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* This harbor was selected by Major General Halleck as the site of a military post, but subsequently abandoned for Kootsnahoo. Meade anchored here February 14, 1869, and destroyed five of the six houses that constituted the settlement as a punishment for murders committed by these Indians. The bay will shelter a large fleet, but the depth of water is so great that it is an undesirable anchorage.

† U. S. N. Hydrographic Notice No. 13, 1869, p. 17; from Meade's Remark Book.

‡ Vancouver, vol. iii, p. 292.

§ On U. S. Coast Survey Chart No. 701, corrected to 1877. For Mr. Bernhard Bendel, formerly of Bremen, an Alaskan pioneer, now deceased, to whom the Coast Survey parties have been repeatedly indebted both for valuable information and generous hospitality.

six or seven miles across the sound. The cape is moderately high, and from its northern face, in a generally N. by W. direction, a succession of irregular rocky patches, reefs and islets make off between three and four miles.

At the northern extreme of this series of obstructions is a small island called by the Russians **Poverotni Island**, or, in translation, Turn-about Island. This island is associated with others still smaller, of which three are indicated by Tebienkoff, while other charts very generally omit all but Poverotni. The latter is wooded and rather high, flattish on top with a little peak in the middle as seen from the northeastward. There is a passage between Poverotni and Cape Bendel, but under ordinary circumstances, ~~unless~~ with ~~good~~ local knowledge, its use cannot be recommended to navigators.

These reefs, nearly connecting the island with the Kupreanoff shore, would, in the presence of an extensive commerce, constitute a serious danger. As it is, they are the most and only serious obstruction to navigation between Wrangell and Peril straits on the inside route to Sitka.

From Cape Bendel the shore of Kupreanoff Island trends **ENE.** in a general way for about twenty-one miles. This stretch of coast is not known to contain any harbors, although there are numerous small indentations. Off the small projecting points are numerous rocks at no great distance from the shore. The latter is nearly level and moderately wooded for three or four miles back from the beach. In the vicinity of Cape Bendel the immediate shore is bluff and heavily timbered. About twenty miles **ENE.** from the cape and about a cable from shore are the **Perenosnaia*** or **Portage Islets**, consisting of two small and rather low wooded islets, which serve as land marks for the entrance of Perenosnaia or Portage Bay. **Portage Bay.**

These islets are connected by a rocky platform at low water, their total extent being about five hundred feet **E.** and **W.** and two hundred feet wide. Three fathoms can be carried close to the edge of the rocks. Three-quarters of a mile **E.** ¼ **N.** from the eastern islet is the entrance to Portage Bay. From this point of view the west point of entrance bears south a little more than a quarter of a mile; the east point of entrance, which is farther in, bears **SE.** by **S.** ½ **S.** nearly half a mile, and the Portage Islets **W.** ¼ **S.** **A S.** by **E.** ¾ **E.** course carries in, clear of dangers, with not less than three and three-quarters fathoms in mid-channel of the narrow entrance. (See sailing directions.)

From a reconnaissance by the *Hassler* in 1882 it is learned that Portage Bay lies about **NW.** and **SE.**, in a trough between mountains fifteen hundred to two thousand feet high and with others rising still higher beyond it to the **SE.**

The entrance to the bay is very narrow, not exceeding a quarter of a mile **E.** and **W.**, which is further diminished to a channel of about three hundred feet between the three-fathom curves by shoal water making out from either shore. The east and west points of entrance are narrow and pointed, the eastern being about a quarter of a mile **SE.** by **E.** from the western one. Opposite the east point within the bay the western shore recedes to form a cove, which is reduced to a mud flat at low water. Half a mile farther south and east another cove, dry at low water, with a narrow entrance, indents the same shore. The northeastern shore within the east point of entrance is strait and compact, and the navigable portion of the bay extends parallel with it about two miles with an average width of two cables, the shores shoaling off everywhere very gradually and without known dangers beyond the three-fathom line. The bay extends about three miles farther **SE.**, of which the last two miles are comprised in **Goose Cove**, dry at low water and nearly a mile wide, with **Stop Island** and Harrington Rock in its northern part. The top of the latter appears to be always visible.

SAILING DIRECTIONS

FOR PORTAGE BAY.

The approach to the entrance is marked by the Portage Islets, the shore east from which dries off some distance at low water and should not be approached nearer than a quarter of a mile. Boulder Point, east from the entrance, is fringed by large boulders which cover at half tide and are marked by kelp. It should not be approached within a cable.

From a point off the entrance, where the Portage Islets shut over each other bear **W.** ¼ **S.**, the east point of entrance **SE.** by **S.** ½ **S.** and the west point of entrance **S.**, the course is **S.** by **E.** ¾ **E.** until the west point of entrance bears **W.**, when the course will be **S.** ½ **W.** until east point of entrance bears **ENE.**, when the course will be **SE.** until east point of entrance bears **N.**, when anchorage may be had in four to six fathoms; or the navigator may proceed farther southeastward and obtain, for a mile, about the same depth over a sandy bottom.

This bay is well adapted for steamers, and is considered an excellent anchorage notwithstanding its narrow entrance, as it has no channel dangers. Its character indicates that it may once have been the site of glacial action.

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*Named **Perenosnaya Islands** by Meade in 1869, who called the bay **Perenosnaya Creek**. It was named **Perenosnaia (Portage) Bay** by the Russians, and has also been called **Portage Harbor**. Meade states that the course from Point Highland to Perenosnaia Creek is **NE.** ¼ **E.** nearly.

Observations by the U. S. Coast Survey in 1882 place the observing spot, which is three hundred and twenty-five yards northeasterly from the east point of entrance, in

Latitude	57° 00′ 10″ **N.**
Longitude	133° 20′ 03″ **W.**

The variation of the compass was 30° 51′ **E.** in 1882 and the dip 75° 08^{h}.

The extreme rise and fall of tides observed was twenty feet, the mean rise and fall about fourteen feet. The tides run two to four knots in the narrow entrance, and at springs form strong eddies to half a mile farther in, which should be taken into account when proposing to enter the bay. The shores are densely wooded. Water may be obtained in the extreme **SW.** corner of the bay from a stream which rises in hills about five hundred feet high.

Portage Bay is separated by an isthmus about two miles in width from the northern extreme of Duncan Canal. Across this isthmus the natives are accustomed to make portages, from which the name of the locality, alike in Russian and English, is derived. The regular rounds of the trading vessels of the Russian Company included a visit to this harbor. The course from Portage Bay to clear Cape Fanshaw about one mile, according to Nichols, is ~~W. ½ N.~~ W. N. ½ N.; very different from existing charts, which there are not data to correct.

The general direction of the shore of Kupreanoff Island continues the same, that is, about **E NE.**, from the eastern headland of Portage Bay for five miles to a point where the coast gradually rounds to the eastward and southward. The charts differ as to the abruptness of the change of direction, but it would appear that a moderately high bluff or cliff is here exposed, to which the name of **Cape of the Straits** has been applied by English authorities. Hence the shore trends **E SE.** toward Prolewy Point, nine miles distant.

This strip of coast is more or less broken or indented, and off it lies three islets, termed by the U. S. Navy the **Soukhoi Islets,*** which extend about a couple of miles off shore, nearly reaching mid-channel of this part of Frederick Sound. Little is known of them. The portion of Kupreanoff Island to the eastward of the narrow isthmus at Portage Bay will properly take the name of the **Lindenberg Peninsula**, which is the essential meaning of a term applied to it on Russian Hydrographic Chart No. 1494, but which might be literally translated as the **Lindenberg Shore.**

There is a passage on either side of the Soukhoi Islets, and in coming to or going from the northern entrance to Wrangell Strait the western passage is to be preferred, though it would not appear so from the charts in common use.

From the Portage Islets (**W.** by **N.** ½ **N.**) about eleven miles lies **Cape Fanshaw**, named by Vancouver, "a very conspicuous, low, projecting point, situated in latitude 57° 11′."† It is heavily timbered. A deserted village was found here by Whidbey, and ~~a present settlement is reported by~~ the ~~U. S. Navy~~.‡ Gone See Pinta Survey 1885

Two bare rocks, twenty feet high, lie off Cape Fanshaw, the outer one about **NW.** two miles from the cape, the inner one between the former and a good-sized island, from which *reefs* extend toward shore.

From the courses and distances of the *Hassler* and other vessels in this vicinity it is evident that Cape Fanshaw and Point Highland lie several miles farther west than they are usually mapped, or else Portage Bay and the northern entrance to Wrangell Strait lie about the same distance farther east. Data sufficient to properly correct the charts have not yet been received.

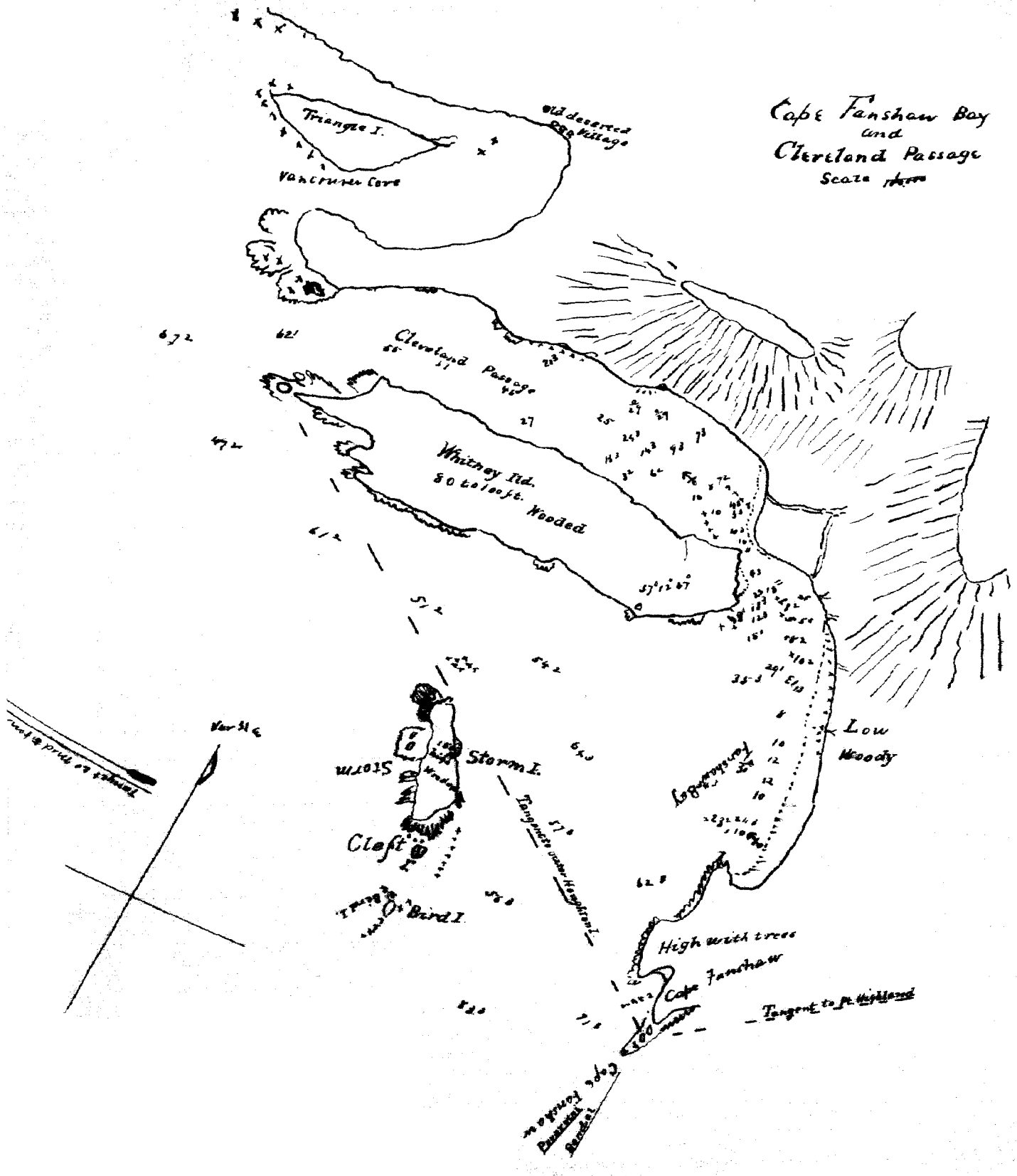
Cape Fanshaw divides the eastern part of Frederick Sound into two tolerably distinct arms, one of which continues in the same general trend as the western portion of the sound, namely **N NE.**, while the other and much narrower portion trends to the eastward at first about **E. by N.** From the cape, the shore indented, low and densely wooded, has a generally **E.** direction, and at a distance of six and a half miles **E. ¼ N.** lies **Point Highland**, named by the U. S. Navy, probably from some change in the character of the topography near it. Between this point and the cape are two indentations of small extent, separated by a point which extends southward nearly into line with Cape Fanshaw and Point Highland. Eastward four miles from the latter is **Bay Point**, the western point of entrance to a large bay in which are several islets. No information is at hand in relation to it, but it has the aspect on the chart of a glacial lagoon.

Hence about five and a half miles **E. ½ N.** lies the extremity of **Point Vandeput**, named by Vancouver, and described by him as a low, narrow point of land two miles long in a **N.** and **S.** direction, and about half a mile broad.

* They were named by Meade in 1869, who says of them that they are an excellent guide for entering Wrangell Strait.

† Vancouver, vol. iii, p. 280.

‡ There is a strong probability that many of the villages found unoccupied by Vancouver's parties and reported as deserted were not permanently abandoned, but merely left unoccupied while the population were temporarily engaged in their annual fishery, trade or hunting in some other locality.


Cape Fanshaw Bay
and
Cleveland Passage
Triangle I.
Old deserted Village
Vancouver Cove
Cleveland Passage
Whitney Rd.
80 to 100 ft. Wooded
Storm I.
Storm
Cleft
Bird I.
Low
Woody
Lagoon
High with trees
Cape Fanshaw
Tangent to Pt. Highland
Tangents across Hanging I.

From its southern extremity a *reef* extends somewhat over a mile. In the western angle, formed between the point and the main shore, the Russian hydrographic charts indicate an anchorage, without soundings or details; but according to Nichols the appearance of the land is not such as would justify a stranger in seeking anchorage there without a chart.

In 1882 at high water, with a strong southeaster blowing, the breakers on the reef off Point Vandeput were very conspicuous.

East from Point Vandeput and between it and a conspicuous point eastward from it a bay is formed which appeared to promise good anchorage. On attempting to enter it in heavy weather with the *Hassler*, about a mile off the entrance a ground swell was noticed and the lead showed six fathoms; a short distance farther out ten fathoms and more were had. At the bottom of the bay is an almost perpendicular mountain, scored by eight or ten land-slides. The U. S. Coast Survey party of 1869 believed they saw indications of a glacier at the foot of the bay, but it was not observed in 1882.

About **NE.** by **N.** ½ **N.**, some eight or nine miles inland, the U. S. Hydrographic Chart No. 225 indicates a remarkable pinnacle or stone four hundred feet high, on the top of a mountain, to which the U. S. Navy has applied the name of the **Devil's Thumb.** The shores of this portion of Frederick Sound are very imperfectly known, and a more careful survey would probably develop the need of considerable change in the charted shore-line. So far as its features are here referred to, they are taken on the authority of the more recent English and American charts. From these it appears that about seven miles in a **SE.** by **E.** ½ **E.** direction from Point Vandeput there lies a low wooded point, which was named **Point Agassiz** * on account of its association with the remarkable and sublime glaciers in its immediate vicinity. These creep from the snowy summits and ravines of the coast range toward the water's edge, which at certain seasons they overhang, covering the adjacent sound with miniature bergs so begrimed with mud and gravel as to be readily and frequently taken for half-submerged rocks.

Off the end of Point Agassiz, as at Point Vandeput, *a shoal* makes off for a mile or so, which prevented Whidbey from landing and kept his party wet, cold and hungry, in their boats until dawn. **NW.** ½ **N.** from this point *a sunken rock* and two visible rocks are reported, the former about two miles away. ~~It is quite possible that these "rocks," which do not appear on the older charts, may have been suggested by mud-covered ice fragments.~~

A short distance northward from Point Agassiz is a magnificent glacier, with three feeders in the coast mountains, which discharges its burden of ice directly into the water. This has been named the **Patterson Glacier,** and appears from the imperfect descriptions yet received to discharge on both sides of Point Agassiz—at least on the eastern side of Point Agassiz an immense glacier comes down to a good-sized bay which is usually encumbered by mimic bergs from the foot of the glacier and has been called **Carlile Bay.**† It is three or four miles in length **E SE.** and **W NW.,** unsurveyed, with Point Agassiz for its western point of entrance, while at its eastern extreme rise the **Horn Cliffs,** being the front of a remarkable bold head over a mile in extent, eighteen hundred feet high, falling directly to the water, with a sugar-loaf peak or pinnacle towering above and behind the brink of the cliffs. In the same vicinity, a little to the eastward of the cliffs, the U. S. Coast Survey party of 1869 reports a remarkable glacier, which "appears to fall from an altitude of 2,000 feet at an angle of 45°;" when one thousand feet or more below its source the angle becomes smaller, the slope more gradual until the water is reached, and then the broken fragments of ice almost cover the surface of the adjacent portion of the sound.

In this vicinity, in certain places at least, according to Vancouver, there is a small extent of low flat land, well wooded, lying before the coast mountains, which rise abruptly to an extraordinary height.

The *Hassler* party report that the whole country from Point Highland to Horn Cliffs is a mass of most remarkable mountain peaks, while between Points Vandeput and Agassiz is a long, low, flat island, well wooded, and separated from the base of the mountains by a strip of open water into which the Patterson glacier discharges itself. The island is doubtless an old glacial moraine. **Moraine Island.**

The entire coast northward from Horn Cliffs to Cape Fanshaw is unsurveyed and should be approached with caution. By vessels running at night a good lookout should be kept for large masses of ice which often float nearly submerged or covered with mud and stones, and which have been taken by experienced navigators for rocks awash. In the vicinity of Horn Cliffs are some islets. The cliffs themselves form the northeastern headland of Soukhoi Strait, and thence the entrance to Wrangell Strait appears to bear about **S SW.** about five miles distant.

Before proceeding to describe the northern and western shores of Frederick Sound, the group of islands whose coasts have just been reviewed may be briefly characterized.

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* By the U. S. Coast Survey in 1877, on chart No. 701.

† In honor of the late Superintendent of the U. S. Coast and Geodetic Survey, Carlile P. Patterson, these names were suggested by Capt. E. P. Lull, U. S. N., late Hydrographic Inspector to the Survey.

KUPREANOFF AND ASSOCIATED ISLANDS.

They compose a well-marked and tolerably compact group, wedged between Sumner and Chatham straits, Frederick Sound and Soukhoi Strait. It comprises, besides a multitude of islets and rocks, **Mitkoff, Woewodski, Kupreanoff, Kuiu,** and also **Coronation Islands.** An island is perhaps formed by Dry Passage and Wrangell Strait between Woewodski and Mitkoff islands, but until Dry (or Blind) Passage is fully explored it is hardly worth while to do more than indicate the presumed division. The land composing these islands is but moderately elevated. Mr. Johnstone, who explored the greater portion of this group, states, in his report to Vancouver, that the western portion of Kuiu Island "is by no means so high or mountainous as the land composing the adjacent countries on the opposite or northeastern side of the sound," but is "chiefly of moderate height, and produced a noble forest of large and stately pine trees of clean and straight growth, amongst which were a few berry bushes and some alders. The shores along the bays and arms they had visited were in general low, and presented a probability that if the wood were cleared away the soil of the country might be advantageously employed under cultivation. These bays and arms abounded with a greater number of salmon and sea-otters than Mr. Johnstone had observed on any other part of the coast."* Kupreanoff Island includes more than half the area of the group, while most of the remainder is comprised in Kuiu and Mitkoff islands. Kuiu, in its form and topography, is one of the most remarkable islands in existence.†

The natives of this vicinity, especially those about Keku Strait, have the reputation of being treacherous and turbulent. The naval forces of the United States, and formerly of Russia, have been several times employed to punish, by destroying their villages, the inhabitants of some of the settlements of worst repute. It is, therefore, advisable here that a strict watch should be kept and no natives allowed on board at night, or without proper precautions in the day, by masters of unarmed vessels, particularly those of small tonnage and low free-board.

ADMIRALTY AND ADJACENT ISLANDS.

It remains to describe the northern and western shores of Frederick Sound.

From Cape Fanshaw **N.** by **W.** ¾ **W.** five miles lies **Point Walpole** of Vancouver, with some islets and *sunken rocks* near it; the shore between it and Cape Fanshaw is somewhat indented and bordered by a large number of rocks. About **NW.** ½ **N.** from Point Walpole, at a distance of two and a half miles, lies **Point Hobart** of Vancouver, about which *sandy shoals* extend to a moderate distance from the shore.‡ The point is about fifteen hundred feet high, descending steeply to the sea.

This point forms the northwestern and Point Walpole the southeastern headland of the entrance of an extensive bay called Port Houghton by Vancouver. This bay extends from its entrance five or six miles in an **E NE.** direction with an average width of two miles and a quarter.

Port Houghton. The head has not been surveyed. In a hasty reconnaissance with the *Hassler* Nichols found, in accordance with Vancouver, (though not with later charts,) that there are no islands in the entrance of Port Houghton except those around Point Walpole, which comprise a group of four or five not exceeding a mile from the shore, the largest of which, about half a mile in extent north from Point Walpole, was named Robert Island. Off its northern end rocks extend some distance. Vancouver observes: "From Point Hobart extends a bank of sand a little distant from the shore, but there is a clear passage between it and the islets [off Point Walpole], within which it forms a snug harbour with soundings at a considerable distance from the shore of from ten to six fathoms water, sand and muddy bottom. It is bounded by lofty mountains, and from their base extends a small border of low land forming the shores of the harbour, which I called Port Houghton."§ The anchorage mentioned by Vancouver was found by Nichols on the southern shore **SE.** ¼ **E.** about three miles from Point Hobart, but is open to northwesterly winds. Nichols anchored in fifteen fathoms about two cables off shore, bottom sand and broken shells. The southern shore appears to have a number of islets and rocks above and below water near it, but most of the bay is occupied by deep water without anchorage; in the middle of the bay Nichols got eighty or ninety fathoms. In the eastern part of the bay are several islands, of which **Walter Island** is the largest, with one small one west from its northern end and several smaller ones south and east. About **E.** ¾ **S.** from Point Hobart a stream comes in from the southeast with an island off its mouth. About on a line joining this and the islet west from Walter Island and nearly midway between them is *a sunken rock.*

The bay **N.** and **E.** from Walter Island has not been examined and may afford anchorage.

The variation of the compass hereabouts is about **30°** easterly.

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* Vancouver, vol. iii, p. 293.

† Its outline, as indicated on the charts, strikingly suggests a mass of entrails thrown out upon the ground, while the surrounding islets and rocks recall, in number and relative size, the flies which are usually congregated in such a vicinity on a warm summer day.

‡ It has been called **Point Gastineau** by Homfray. Nichols saw nothing of the shoals, which he suspects are not extensive.

§ Vancouver, vol. iii, p. 280.

From the anchorage in Port Houghton The Twins are visible well open from Point Hobart, the latter bearing NW. ¾ W.

Off the entrance of the port, at various distances from the shore, lie a number of groups of rocks or islets, the presence of which probably influenced Vancouver when he named this body of water a Sound. One of these groups is called by Meade the Five Fingers,* perhaps on account of its appearance from certain points of view. It is situated about four miles W. by S. ½ S. from Point Walpole and is composed of a cluster of six or seven islets. Another is formed by a pair of islets named by Nichols the Brothers, lying in the same direction as the Five Fingers, seven miles from Point Walpole. To the northward there are still others, of which The Twins, five miles NW. ¼ N. from Point Walpole, are two small islets, and Sunset Island, about a mile in extent, lies in the same direction ~~seven and a half~~ miles NW. ¼ N. from Point Walpole. These were named by Meade in 1869.

S SE. from the Brothers and SW. ½ S. six miles from Cape Fanshaw Tebienkoff and Vancouver both locate a small island with a few rocks close to it. It does not appear on Meade's chart.

From Point Hobart the shore extends without noticeable indentations NW. ¾ N. ten miles to the entrance of Windham Bay, unsurveyed, small and encumbered by islets. Hence the shore trends SW. by W. ½ W. about three miles to Point Windham, named by Vancouver, and forming "the eastern point of entrance into Stephens Passage."† It is a rather flat-topped bluff, about two thousand feet high, descending rapidly to the water, bare above and on its face, with its lower flanks clothed with pines, which also intervene between the foot of the bluff and the water's edge. Meade gives a view of it on U. S. Hydrographic Chart No. 225, and says it resembles a gigantic ladder of three steps. From this point *rocks* extend under water a mile to the westward. Behind the point to the northward is Mount Windham, two thousand feet high, named by the U. S. Navy. The geographical position of Point Windham, according to the latest charts, is

Latitude	57° 30′ N.
Longitude	133° 32′ W.,

from which the nearest land on the opposite shore bears W SW. about three miles; but the southwestern headland of Stephens Passage, named by Vancouver Point Hugh, bears from Point Windham SW. ~~by S.~~ ½ S. ~~four and a half~~ miles. According to Vancouver this is a lofty rocky promontory, with a ledge of rocks extending from it southward nearly a mile ~~and three-quarters,~~ upon which, with a strong southerly wind, heavy breakers were observed. It is less timbered than the adjacent shores. Point Hugh is reported to look as if it were in the middle of Stephens Passage when viewed from the southward. This is due to the fact that immediately to the southward from Point Hugh is the opening of Seymour Canal, named by Vancouver and extending NW. by W. from its entrance a distance of some twenty-nine miles.

From notes furnished by Revs. Sheldon Jackson and S. H. Young it appears that there is a canoe passage between the supposed head of Seymour Canal and an indentation of the south shore of Stephens Passage west from Point Arden.

It is uncertain whether there is absolutely continuous water passage here or not, as communication with Mr. Young, who is reported to have passed through here in a canoe, has not been practicable, and there may have been a short portage. In any case there is a considerable amount of water communication, and perhaps a continuous passage where nothing but solid land is indicated on any chart.

Seymour Canal has a width varying from one and three-quarters to five miles, and, including islands, averaging about three and a half miles. Its southwestern point of entrance is Point Gambier, named by Vancouver, and lying from Point Hugh S. by W. about two miles. From this point the western shore of Seymour Canal to the northwestward is moderately elevated and produces fine timber; the immediate shore along the beaches is low and the beaches in many cases are sandy. It is much indented with small bays and coves, and at some point on this shore it is supposed that a channel comes in from the Hutsnu region, separating the land of the Admiralty Group into at least two major divisions.

The eastern shore is more irregular and studded with a larger number of islets.

Neither have been sufficiently explored to describe in detail. The canal terminates, according to Vancouver, in latitude 57° 51′ N., at the mouth of a small stream. One mile from the southern termination of this stream is an island about three miles and a half long and half as broad; half a mile from the southeastern point of this island lies another of about the same width and six miles long. This appears on some MS. charts as Tiedeman Island. These islands trend NW. by W. ½ W. and SE. by E. ¼ E., or nearly so, are situated in the middle of the canal, whose northern extremity they longitudinally divide into two parts, of which the portion to the northeastward is much obstructed by islets, while on the southwest shores of the islands some rocks are said by Vancouver to occur. The adjacent country is moderately high and covered with timber of large growth except toward Point Hugh.

* Meade also applies the name Five Fingers to the Pointers off Port Simpson.

† Vancouver, vol. iii, p. 280.

Ship Isl the two small ones were called the Brothers but should be changed

From Point Gambier **False Point Pybus**, the Point Pybus of the Russian Hydrographic, U. S. Hydrographic and British Admiralty charts, but not of Vancouver or Tebienkoff, lies south four and a half miles. Four miles from the point, in an **E.** by **N.** $\frac{3}{4}$ **N.** direction, lies Ship Island, of small extent, named by the U. S. Navy. 3 high water Islands- one large two small

From this island, in a **S.** by **W.** $\frac{3}{4}$ **W.** direction, extends a chain of unnamed islets for a distance of twelve miles. These islets are gathered in small clusters, or single and separated from each other by gaps of two or three miles, and from the adjacent coast by an interval of about the same extent. The southernmost islet is quite small, and was called **Yelowy** or **Spruce Island** by Zarembo.

From Point Gambier **Point Pybus** of Vancouver (correctly followed by Tebienkoff) lies **S.** $\frac{3}{4}$ **W.** about seven miles. On an islet in close proximity to this point Whidbey determined the latitude to be **57° 18′ N.**

The shore to the south and west of Point Pybus is much indented with small bays and guarded by "vast numbers of small islets and rocks, both above and beneath the surface of the water."*

About ten miles **S.** $\frac{3}{4}$ **W.** from Point Pybus lies **Point Napean** of Vancouver,† a high, steep, bluff, rocky point, situated in latitude **57° 10′**, off which a ledge of rocks extends half a mile.

Woewodski Harbor.

Immediately northward from the point is Woewodski Harbor, named by Zarembo.‡ This harbor consists of the southern half of a small double-headed bay about two miles in length **NW.** by **W.** $\frac{1}{2}$ **W.** and **SE.** by **E.** $\frac{1}{2}$ **E.**, and about three-quarters of a mile in width. This bay is divided into two nearly equal portions longitudinally by sundry shoals and islets, which form the protection of the anchorage from the north while reducing its available width to about a quarter of a mile.

SW. $\frac{1}{2}$ **W.** from the northern end of Yelowy Islet two and a half miles lies **Deepwater Point**, or **Glubokoi Point** of the Russians, which is about two miles northward and westward from Point Napean. This forms the southern point of entrance to Woewodski Harbor. There is deep water close to it, from whence the name is derived. Half a mile **N NE.** from the point lies **Polivnoi Rock**, apparently a bare rocky islet of very small extent, with two smaller rocks close to it. Nearly midway between the point and Polivnoi Rock, **N NE.** and **S SW.**, lies *a submerged rock*. The channel passes to the southward from it. No soundings are recorded between the sunken rock and Polivnoi. **W.** by **N.** $\frac{3}{4}$ **N.** about three-quarters of a mile from the latter is **Liesnoi Islet**, named by Zarembo, **S.** by **W.** from which is the anchorage. The islet is about four cables long **W.** by **N.** and **E.** by **S.**, quite narrow, and connected by shoals with the land to the westward. To the southward from it the depth of water varies from three and a half to eleven and a half fathoms. The head of the bight westward from a north and south line drawn by the western end of this islet is infested by *submerged rocks, shoals and banks* with from four to two fathoms water.

Near a stream on the southern shore is, or was, an old fortified retreat belonging to the natives. There appear to be several sand-beaches about the anchorage; wood and water are adjacent and easily obtained.

This harbor was discovered April 17, 1799, by Mr. Bumstead, of the ship *Eliza*, Capt. Rowan, fur-trading from Boston on the **NW.** coast. The whale-boat was sent to search for a harbor and "found seven fathoms water. The passage was not more than thirty rods wide, and almost in the middle was a sunken rock which made it dangerous on account of the currents setting violently upon it." "At length we got in and opened a fine harbour, completely land-locked, which, as our Indian navigator informed us had no name, we called Eliza's Harbour, in compliment to our ship." Yelowy Island bore **E.** by **N.** The harbor appeared "to be the entrance to a small sound, there being a clear passage as much as five miles in sight, extending in a northwest direction, and then it strikes off to the westward, where, perhaps, it may join with Menzies' [Chatham] Straits. At the entrance [of the harbor] the current sets out at the rate of five knots an hour, but does not run in with the same violence, neither so long a time."§ Allowing for a constant error in the longitudes of the *Eliza's* log, the position given by their journal for Woewodski Harbor is

Latitude	**57° 10′ N.**
Longitude	**138° 55′ W.**

A sketch of this anchorage, made by Zarembo in 1838, from which the following directions are derived, is to be found on Russian Hydrographic Chart No. 1396. From this sketch it appears that the geographical position of the mouth of the stream near the head of the bay is

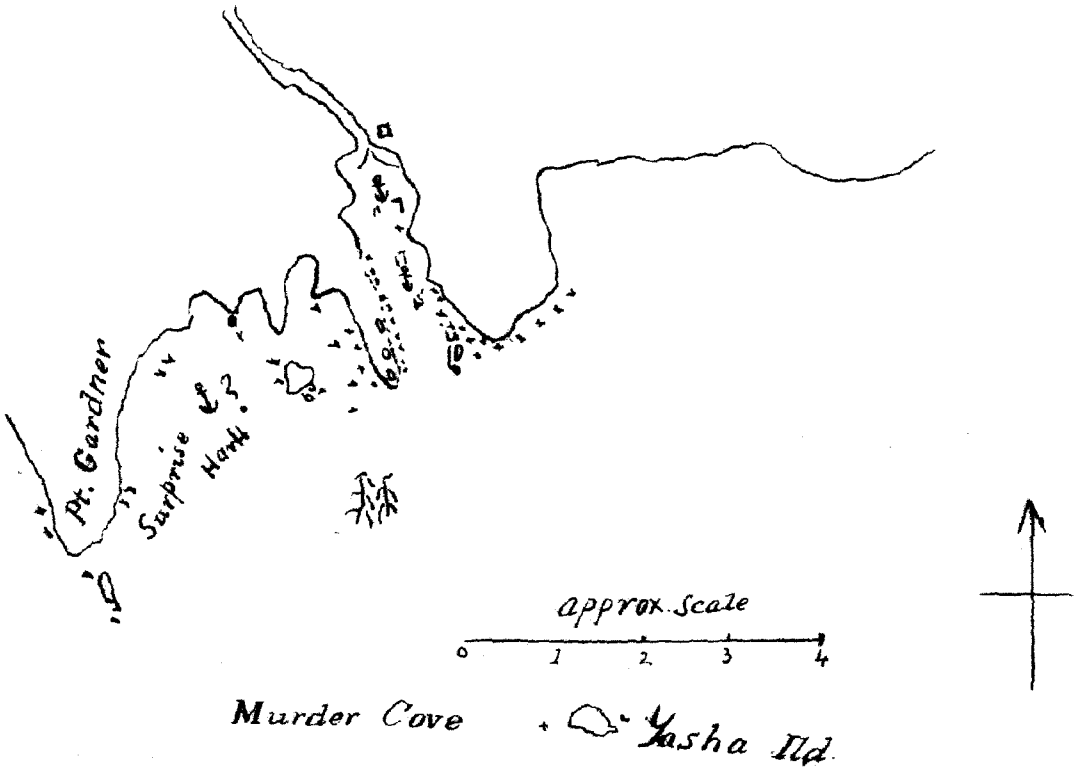
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* Vancouver, vol. iii, page 273.

† This point has been termed **Nepean, Nepon, Nepkan**, &c., on Russian charts and in other publications; the name which is spelled **Napean** by Vancouver in four places in his text is found as **Nepean** on his chart, whence it has been copied on to most modern charts. The orthography of Vancouver's text has not been noticed on any chart.

‡ After one of the governors of the Russian colonies in America.

§ Manuscript journal of the ship *Eliza*, of Boston, on the northwest coast in 1799.


Pt. Gardner
Surprise Hbr.
approx. Scale
0
1
2
3
4
Murder Cove
Yasha Ild.

Latitude ..... 57° 12′ 30″ N.
Longitude ..... 134° 05′ 00″ W.

The variation of the compass in 1838 was 27° E.

SAILING DIRECTIONS

FOR ENTERING WOEWODSKI HARBOR.

After rounding either Point Napean or Yelowy Islet at a distance of not less than a mile to avoid reported dangers, a course may be laid for Deepwater Point to pass it at a cable length, there being abundance of water bold-to the shore. Thence the course will be NW. by W. ½ W. one mile, until the western edge of Liesnoi Islet bears N. by W., when anchorage may be had in about seven fathoms.

In passing out the navigator should keep at a cable length from Deepwater Point until out of the range between the point and Polivnoi Islet.

These directions are solely founded on Zarembo's sketch, above mentioned.

From Point Napean SW. ½ W. about three miles, across an indentation of considerable size, (whose shores appear to be fringed with rocks and which affords no anchorage,) is a point with *rocks* extending a mile to the eastward from it. This forms the northeastern point of entrance to Herring Bay, (**Seldovaia** in Russian,) named by the Russians, and used as a stopping-place by their trading vessels. It is small, in general form and direction resembling Woewodski Harbor, but apparently less convenient to enter on account of the *recfs*, which are represented as extending from the heads at either point of entrance. There are also rocks inside, at its head. No soundings are given, nor is there any published survey of this bay, which to be entered by any navigator will require the exercise of prudence and circumspection, and is not at present recommended without a local pilot. **Herring Bay.**

The southern point of entrance of this bay is separated by another indentation, containing an islet, and about a mile and a half in extent, from **Point Townshend** of Vancouver, from which point SW. by S. ¾ S. eleven or twelve miles distant is **Point Gardner**, named by Vancouver, and forming the NW. headland of the western entrance of Frederick Sound. The shore between this point and Point Townshend is marked by numerous irregularities and off-lying detached rocks. Vancouver describes the topography of this vicinity as rugged but producing abundance of very fine pine timber, some trees of which measured twenty-three feet in girth. The opposite shore of Chatham Strait appeared less fertile and with a more abrupt ascent from the water's edge. Point Gardner itself is two miles long by three-quarters of a mile in width, apparently moderately elevated, and stretching out into Chatham Strait, of which the width is here reduced to less than five miles. By Vancouver's observations and the latest charts the geographical position of Point Gardner appears to be

Latitude ..... 57° 01′ N.
Longitude ..... 134° 28′ W.

Among the rocks and islets which cluster to the northeast of Point Gardner are two anchorages which owe their names to tragedies which have taken place there, with natives as actors and whites as victims. The first of these, named Surprise Harbor by the U. S. Navy, is about two miles NE. from the point, and reported to be unsafe in southeast weather but convenient with northerly and westerly winds. It is sheltered to the NE. by two islets. No survey has been made and no soundings have been reported. In this vicinity coal is reported to exist. **Surprise Harbor.**

On the NE. side of the islet is another anchorage, named Murder Cove by the U. S. Navy, in regard to which no special information has been received. The traders occasionally anchor here, and one small party, while asleep on the beach, were murdered by natives, their boat rifled and bodies left to be destroyed by wild animals. **Murder Cove.**

According to Vancouver, S. 23° E. (true) three-quarters of a mile from Point Gardner are some rocks. In nearly the same direction, three miles SE. by E. ½ E., lies **Yasha Island**, observed by Vancouver but named by the Russians. It is low, small and wooded, apparently bold-to, and may be passed on either side. This island is reported to be situated on a ridge or bar having about twelve fathoms water, which is said to extend from Point Kingsmill to Point Gardner, with deeper water on either side.

This concludes the necessarily rather imperfect description of Frederick Sound.

Next in order are the western shores of Baranoff and associated islands.

Supposed that all dangers show off St Eustatius Point
Saw a kelp patch as per sketch

CAPE OMMANEY TO PERIL STRAITS.

From Cape Ommaney, in about latitude 56° 10′ N., the main coast of the land known as Baranoff Island trends in a general way NW. by W. ¼ W. to the vicinity of Sitka Sound, a distance of some fifty miles. This shore is much broken by bays and indentations of variable extent. Its southern part is bold and rocky, rising rapidly from the water, and culminating within a short distance in high mountainous country, very much broken, and densely wooded with coniferous trees. The interior of this country is absolutely unknown. Two miles and a half W. by N. ¾ N. from

Larch Bay.

Cape Ommaney is **Bobrovoi Point** of the Russians, forming the southeastern headland of Larch Bay, (**Listvinichnaia** in Russian,) a large open bay three and a half miles wide from headland to headland in a NW. by W. and SE. by E. direction, and extending northward about the same distance. Its head reaches within a mile or two of Port Conclusion. The southeastern shore of this bay is represented as remarkably *infested by rocks*, and on none of the charts is it represented as affording anchorage. The shore in this vicinity is represented on Tebienkoff's charts very differently from the same coast as it appears on the Russian Hydrographic Office publications.*

W. by N. ¾ N. eight and a half miles from Bobrovoi Point lies **Puffin Point**, Toporkoff (Puffin) Point of the Russians, the southeastern point of entrance of Puffin Bay, Toporkoff Bay of the Russians. This headland would appear to be a prominent point, with a small islet immediately southward from it. The shore between Larch Bay and this entrance appears to be high

Puffin Bay.

and bold with a narrow fringe of detached rocks along its base. The northern headland of the entrance lies about a mile in a northwesterly direction from Puffin Point and forms a double-headed promontory, with a small bight between the two angles containing a small islet close to the eastern point. Another small islet lies close to the western angle of the headland. The bay extends about four miles in a nearly N NE. direction from the entrance with an average width of three-quarters of a mile, numerous small coves indenting the shores. At the entrance, according to Russian Hydrographic Chart No. 1494, about equally distant from both headlands and somewhat outside of a line joining them, is **Sea-lion Rock**, (Siuchi Kamen,) a bare rocky islet apparently bold-to; another chart places the rock nearer to the northwestern headland. Between it and Puffin Point thirty-five fathoms are reported, and within the water varies in depth from four to twenty-four fathoms. From the conformation of the bay, if it be correctly represented by the charts, it must afford good protection in almost any weather, though doubtless subject to land-squalls or "woollies" (like other narrow bays of this region which are surrounded by high land) and also to a certain amount of ground-swell. No special chart of this bay has come to light, and it is impracticable to give further sailing directions than are comprised in the advice to enter it between Sea-lion Rock and Puffin Point rather than between the former and the northwestern headland.

Somewhat to the northward of NW., about three and a half miles from Sea-lion Rock, lies an unnamed point, which, with **Redfish Cape**, bearing from the first-mentioned point W. ¾ N. about three miles, bounds the entrance of an extensive bay.† A chain of several islets known as the **Redfish Islets** extends S SE. to nearly a mile from the eastern spur of the cape. This forms the western headland of Redfish Bay, **Krasnoi Ribi** or **Krasnoi Bay** of Russian charts, a name

Redfish Bay.

especially applicable to the small body of water NE. from the Redfish Islets, between them and a narrow island a mile in length NW. and SE., which separates this small and unprotected body of water from the mouth of Big Branch‡ Bay. The entrance of this bay is situated between a small island at the SE. end of the long narrow island above referred

Big Branch Bay.

to and the northern headland of **Little Branch Bay**. The passage is about three cables wide, from which the bay extends in a generally N. by W. ½ W. direction about five miles with irregular shores. It has a width of a mile in several places and also contracts to less than half a mile. About midway between the entrance and the head of the bay is an islet, from which, two and a half cables NE. ½ N., is a *sunken rock*. No soundings are given in the bay on the general charts, nor has any detailed survey been made public as far as known.

Directly eastward from the entrance of Big Branch Bay, whose eastern headland forms its northern point of entrance, is Little Branch§ Bay, lying broad open to the SW. swell of the Pacific. The entrance is less than a mile wide about W NW. and E SE., and the

Little Branch Bay.

bay itself extends two and a half miles in a NE. direction from the entrance with a width of less than half a mile. *Shoals* are indicated on its SE. shores, and there are some islets near the entrance. In this vicinity the variation of the compass was determined, in 1847, by the Russians to be 28° 15′ easterly.

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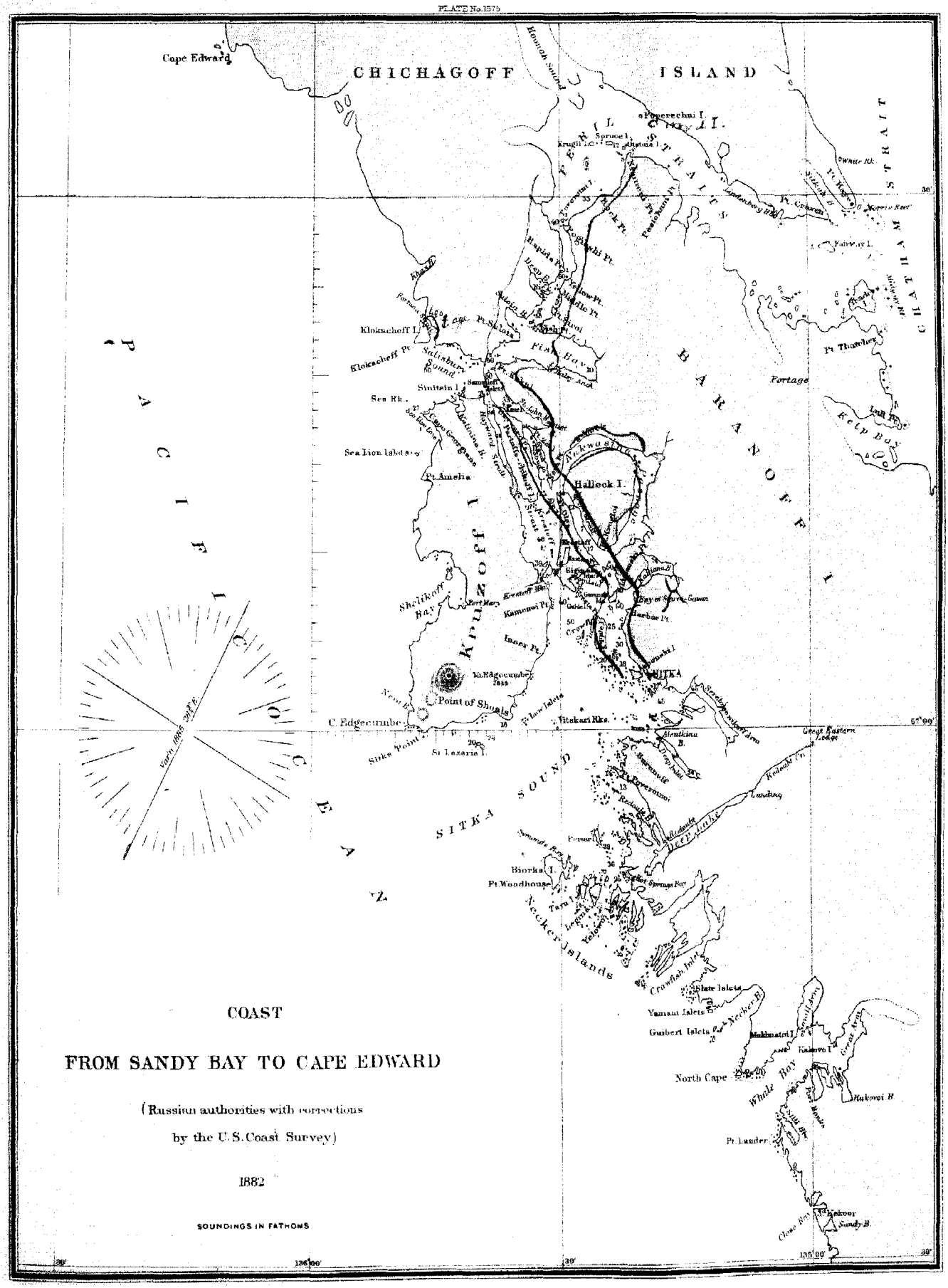
* The known errors introduced by Tebienkoff are so numerous that, in cases of doubt, on this part of the coast the determinations of the Russian naval officers are usually entitled to precedence and will herein be adopted unless the contrary be mentioned.

† This cape, which obtains its name from the **Krasnoi Riba**, or "red-fish,"—a salmon much esteemed by the Russians,—is also called **Krasnoi Ribi Cape** and **Red** or **Krasnoi Cape** on various charts.

‡ **Bolshoi Strelka** of the Russians, literally **Big arrow**, but used here in the sense of *off-shoot* or branch.

§ **Malot Strelka.**

PLATE No. 1575



There is no chart of this bay except such as are included in the general charts. No soundings are there noted. It is, however, probable that shelter may be had near the entrance of the bay. These details are only known to the coasting or trading masters of the region, as the bay has been seldom visited except during the Russian occupation.

For some fourteen miles from Redfish Cape the coast (excepting some small coves) is compact and bold, trending nearly **NW.** and **SE.** Off this piece of coast are three remarkable pillars, (called on the Russian charts **Kekuri,**) called the **First, Second** and **Third Kekoors,** at a distance from Redfish Cape of four, five and nine miles, respectively, in a northwesterly direction. There are also some small coves, apparently snug harbors for small craft, of which no information has been received, and which are known as **Snipe** or **Kulichkoff Bay,*** six miles northwestward from Redfish Cape; **Sandy** or **Peschanaia Bay,**† eight miles, and **Close** or **Dushnaia Bay,**‡ nine and a half miles from the same promontory. These and all other bays opening on the Pacific and facing **SW.** or thereabouts are in the calmest weather uneasy berths for anchorage, from the never-failing and pervasive southwest swell characteristic of this part of the Pacific. Only when this is broken by a barrier of land can an absolutely quiet berth be found.

Thirteen and a half miles about **NW.** ½ **W.** from Redfish Cape is **Point Lauder,** the **SE.** point§ of entrance of a large bay whose **NW.** headland, **North Cape,** named by the Russians, bears **NW.** by **W.** ¼ **W.** about four miles from Point Lauder and is formed by the off-shore extremity of a small island. Between these headlands is the entrance to Whale Bay.‖

Whale Bay.

According to Tebienkoff, Whale Bay extends in a northerly or north-northeasterly direction six or seven miles from the entrance with an average width of two miles. In this vicinity it gives off several branches of considerable size; one, the **Larger**¶ or **Great Arm,** extends from four (Tebienkoff) to eight (Dixon) miles in a northerly direction and is about a mile wide. At its head is a sandy beach, behind which is a valley the bed of which appears to be occupied in part by a shallow pond or lagoon which has not been fully surveyed. At the western point of entrance lies **Kakovo Islet,** in a small bight. To the westward about two miles is the entrance of the **Lesser**** or **Small Arm.** This has a course nearly parallel with that of the Great Arm, appears to be about a mile shorter, and near its **W.** point of entrance has two islets, the larger called **Makhnatoi,** northward from which, near the eastern point of entrance, anchorage is indicated. About four cables southward from Makhnatoi Dixon sounded in forty fathoms. The third arm, Rakovoi Bay,†† is of smaller extent and branches off in a southeasterly direction from the **SE.** extreme of the Great Arm. It is about two miles long and half a mile wide. The shores are indicated as shoal and the entrance is very narrow and obstructed by islands, to the eastward of which is the channel. The charts are discrepant about some features of this bay which is hardly of sufficient importance to justify a lengthy statement of the differences.

Rakovoi Bay.

From the mouth of the bay a series of three principal islands, connected by *shoals,* extends in a westerly direction about two miles. The shore south from them and their own outlines are irregular and indented. The western extreme of the most western island was called by Dixon **Sea-Otter Point,** but his chart of this vicinity is too incomplete to have much value.

The point and island are separated by an exceedingly narrow passage from the northern extreme of Port Banks of Dixon,‡‡ which is the most important anchorage included in Whale Bay. The entrance of Port Banks is indicated to be four or five miles northward from Point Lauder. It is somewhat contracted by an islet adjacent to the southern headland, which apparently leaves a passage some three cables in width with a depth of nineteen fathoms. Within, Dixon records fifteen to twenty-two fathoms. Tebienkoff indicates only eight fathoms in the narrowest part of the entrance and from fifteen to seventeen inside the port. The harbor extends in a southeasterly direction about two miles from its entrance and averages half a mile in width. Dixon's anchorage was in twenty-two fathoms, muddy bottom, **NW.** one or two cables from a small islet, indicated by Dixon, though not shown by Tebienkoff, as lying nearly in the middle of the port. A cove into which a stream falls is represented by Dixon near the head of the harbor. It is repre-

Port Banks.

* **Koulitchkow** of U. S. Hydrographic Office, Chart No. 225.

† **Pestchanay** of U. S. Hydrographic Office Chart No. 225.

‡ **Doushnai** of U. S. Hydrographic Office Chart No. 225.

§ Named by Dixon, in 1787. The **South Cape** of most later charts.

‖ **Kootovaia** of Russian authorities, **Kay-e-ghlen** of the natives, **Port Guibert** of La Perouse, and the **Port Banks** of some authorities. This bay was first entered by Dixon in June, 1787, who prepared a rough compass sketch of some portions of it. A reconnaissance sketch on a smaller scale appears on Chart VIII of Tebienkoff's atlas.

¶ **Bolshoi Rukav** of Russian authorities, the "**Great Sleeve**" (!) of British Admiralty Chart No. 2431.

** **Maloi Rukav** or "**Small Sleeve**" of the above-mentioned authorities.

†† Named by the Russians.

‡‡ Entered and named by him in June, 1787, and of which he has given a tolerable sketch. The name has been, by some, extended to the whole of Whale Bay, which was not surveyed by Dixon, and to which, on nearly all modern charts, the name of Whale Bay (here adopted) has been applied. The port has also been called **Closed Bay** (**Zakritoi**) by Tebienkoff and others.

sented by Dixon that this port is completely landlocked; the land to the northward and southward rises above the snow-line, (June;) to the eastward it is considerably lower; "the pines appear to grow in the most regular and exact order; these, together with the brush-wood and shrubs on the surrounding beaches, form a most beautiful contrast to the higher land and render the appearance of the whole truly pleasing and delightful."* They experienced fine weather while here, the mean of the thermometer being fifty degrees. Spars and a top-mast were obtained, but no village or inhabitants were observed. The geographical position of the anchorage was determined by Dixon to be

Latitude	56° 35′ N.
Longitude	135° 00′ W.,

but the Russian Hydrographic Chart No. 1494, prepared by naval officers, makes it

Latitude	56° 39′ N.
Longitude	135° 00′ W.,

which is probably more reliable, while Tebienkoff indicates

Latitude	56° 35′ N.
Longitude	134° 53′ W.

Dixon found the variation of the compass to be 24° easterly in 1787. The Russian officers in 1847 determined it at 27° 45′ easterly.

About a mile and a quarter S SW. from the southern point of entrance of Port Banks an islet or rock above water indicates *a shoal*, and should not be approached within half a mile without great caution.

Still Harbor. From the entrance to Port Banks, about three miles to the southward, is the entrance to another indentation, named on the Russian hydrographic charts Still Harbor.†

This harbor was indicated by Dixon in his sketch, but, except for its relative position, in an unrecognizable manner. From Tebienkoff's sketch it appears that the western headland is formed by the promontory of which Point Lauder forms the SW. extreme. From the western face of this promontory rocks extend to the distance of half a mile, and from its northwestern extremity two or three small islets project in a northwesterly direction about the same distance. These mark the entrance of Still Harbor, which, perhaps, in the clear is not more than a cable wide N. and S., widening within to six cables, and about two miles long in a NW. by W. and SE. by E. direction. No soundings are given, but one or two islets are indicated by Tebienkoff, and a large number on the Russian American Company's chart of 1849. This harbor deserves a closer examination. It is more convenient to the ocean than Port Banks, and if found convenient in other respects would form a desirable harbor of refuge for vessels bound from or to Sitka and embarrassed by southeasterly weather.

Without further information it is inexpedient to give sailing directions for these harbors, and if the charts are correct they are hardly needed.

The entrance of Whale Bay was noticed by La Perouse, who placed it in latitude 56° 38′ N. and called it Port Guibert. His position agrees with that adopted on the Russian American Company's chart of 1850, and the charts of the Russian Hydrographic Office, which have usually been found, in geographical positions, more reliable than those of Tebienkoff. Point Lauder, according to the best attainable data, is in

Latitude	56° 36′ N.
Longitude	135° 05′ W.,

while North Cape appears to be about four miles to the north and west.

La Perouse remarks, in regard to the appearance of this part of the coast from seaward:

"The land is covered with trees, and of the same elevation as that to the south of Cross Sound. The summits of the mountains (August) are slightly capped with snow, and they are so numerous and peaked that a trifling change of situation (on the part of the observer) is sufficient to alter their appearance. These heights are some leagues within the land, and appear in the distance; in front of them are hills; and these subside into a low land with gentle risings, which terminates in the sea. Before this undulating coast are islands," &c.

The accuracy of this description has been confirmed by the repeated observations of the U. S. Coast Survey parties, not so much for this special locality as for a large part of the oceanic shores of the Alexander Archipelago.

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* Dixon, Voyage, p. 195.

† Tikhaia of the Russians, the Tichat Harbor of the U. S. Hydrographic Office Chart No. 225.

From North Cape the coast trends five miles in a direction N. ¼ W., then, rounding, SW. ½ S. four miles to a cluster of islets called by the Russians the Yamani Islets.* From these islets North Cape bears SE. ½ E. about four miles. The waters thus inclosed form Necker Bay.† It is uncertain whether this bay affords an anchorage or not, but the probabilities are against it, and as it opens directly in the teeth of the ceaseless Pacific ground-swell it could afford but an uneasy berth at best. **Necker Bay.**

Directly in the mouth of the bay are a cluster of islets, which may be called the **Guibert Islets.**‡ There are four principal islets and several smaller ones. All these islets and islands from this group to Biorka Island were included by La Perouse under the name of **Isles Necker,**§ a name which, in his text, has somehow been transferred to Cape Orford Rocks on the coast of Oregon.

Immediately beyond the Yamani Islets in a westerly direction lie the **Slate**‖ **Islets.** They are very numerous and small. They are situated at the southeastern extreme of the entrance to an arm of the sea named by the Russians Crawfish Inlet.¶ The features of this inlet are differently represented on different charts, but it appears to extend in a northerly direction about two miles with an average width of two-thirds of a mile; then trending somewhat more to the westward it is contracted to a quarter of a mile or less. From thence it trends for a mile or more nearly N. by W., receiving a narrow arm of the sea from the southward and westward. It then expands to a somewhat greater width for a distance of about two miles, first giving off a small cove to the westward and then a small narrow creek or arm from its northeastern extreme. The wider portion or basin gives off a contracted passage about two miles long in a northwesterly direction and in some places hardly two cables wide, with irregular shores, connecting with a broader passage or arm of the sea, which it will be more convenient for the present to consider under the name of the western arm as forming a part of Crawfish Inlet, though when carefully surveyed it may be found to be hydrographically distinct. **Crawfish Inlet.**

The shores of the eastern arm of the inlet are quite irregular, and no soundings or anchorages are indicated within its limits on any of the charts. The western arm extends from near its junction with the other from six to eight miles in a southerly and westerly direction to the Pacific, and is represented as free from obstructions and as having an average width of about half a mile. The southern portion of this arm for three or four miles is usually indicated as a mile or more in width, with numerous rocks and islets on either hand, especially about its entrance from the ocean. Throughout its length this arm appears to have a clear passage, but no soundings are recorded in it on the charts. It has been stated that an anchorage exists within the inlet, which is quite probable, but there are no detailed charts of any part of it. The land inclosed between the two arms of Crawfish Inlet is composed of five principal and many small islands, the largest of which is about four miles long in a N. and S. direction and about half as broad; but none of them are yet delineated in detail on any chart.

About three miles northward from the junction of the western arm with the ocean it gives off a branch in a northwesterly direction, extending some two or three miles along the coast between the main shore and a congeries of rocks and islets. This branch is less than half a mile wide, and at its northwestern termination it communicates with the waters of the Necker Archipelago by several channels. The most northern of these opens by a very narrow passage, affording only two or three fathoms water, and extends in a northwesterly direction with constantly increasing width and depth to the distance of about a mile, where the shore of Baranoff Island is indented by Hot Springs Bay,** a small cove less than half a mile in extent, considerably incommoded by islets and rocks except at its head. **Hot Springs Bay.**

The chief importance of this locality is derived from the springs to which it owes its name. In 1860 a hospital for rheumatism and skin-diseases was opened by the Russian American Company at this place. The Indians had previously been in the habit of resorting hither in cases of illness. The springs have a temperature of 122° Fahr., and the water contains sulphur, iron, chlorine and manganese. A number of buildings were erected, and the physicians of the company reported very favorably on the results to patients. Since 1867 these buildings have fallen into decay, though still standing, but

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* A term meaning full of pits or holes; probably applied with reference to their water-worn appearance.

† **Port Necker** of La Perouse; **Rocky Bay** (**Kamenaia** or **Kamenistaia**) of Russian authorities, a name which is of too frequent occurrence in this region; and "**Stone**" **Bay** of other charts.

‡ To distinguish them from the host of others which have likewise received from the Russians the title of **Egg** (**Yaichnia**) **Islands.**

§ Cf. views, 2d sheet, fig. 8, continuation; La Perouse, Atlas, pl. 30.

‖ **Aspid** of the Russians, elsewhere indicated as the **Aspid Islands.**

¶ **Rakoff** or **Rakovoi** in Russian, **Rokovoy Bay** of English authorities.

** **Kluchevoi** of the Russians, and **Kluchev** or **Klutcheff Bay** of English and American charts. In Russian Hydrographic Chart No. 1494, British Admiralty Chart No. 2431, and U. S. Hydrographic Chart No. 225, the name of this locality has been erroneously transferred to a larger bay more than a mile farther to the southeast, which is nearly free from islets and has twenty fathoms water. The cove or bay of the Hot Springs, on the other hand, has only three or four fathoms water in it; the outer portion is so obstructed by rocks and islets that only small craft can enter, and it is represented in its proper place on the British Admiralty Chart No. 2337 and the Russian charts from which that was derived.

it is not known whether there are any whites at present settled at this point. In 1880 numerous fields of potatoes were cultivated here by the natives with success. Between the cove and the southern extreme of Deep Lake* is a low and rather narrow valley portage less than a mile in extent.

Between the entrance of the eastern arm of Crawfish Inlet and Sitka Sound, off the main shore, the **Necker Islands** of La Perouse form a tolerably compact body, a band of elongated triangular form, with its apex near the Slate Islets and its broadest part **N.** and **S.** in the vicinity of Hot Springs Bay. It is composed of all varieties of islets from a tidal rock to islands of considerable size, almost all of which have received names. The group is over eight miles in extent **E.** and **W.** and three or four miles wide in an opposite direction. The navigation of the passages between the islands of which it is composed would seem, from the multitude of obstructions, to be only open to small craft, yet the depth of water varies from ten to over twenty-five fathoms. No good purpose would be served by enumerating the names of all these islets and rocks, but it may be stated that the largest of them are **Yelowoi** or **Spruce Island, Legma Island, Tava** and **Biorka islands**; others are **Wrangell, Torsar, Ataku, Maid, Gornoi, Liesnoi, Goloi, Golomiannoi, Nepropusknoi** and **Kaiuchali** islands, of which, on some charts, the first appears as **Wrangle** Island, Golomiannoi as **Golomi**, Nepropusknoi as **Neprop**, and Kaiuchali as **Kaichali** islands.

The only island of the group of particular importance is **Biorka Island**, the largest, and, excepting some rocks that make off from it, the most western of all.† It is situated **NW.** by **W.** $\frac{1}{2}$ **W.** fifty miles from Cape Ommaney. It is about two miles and a half in extent **NW.** by **N.** and **SE.** by **S.**, and less than two miles wide in an **E NE.** and **W SW.** direction.

Two coves, one from the northward and the other from the southward, indent the northern and southern shores of the eastern part of the island—their heads being separated by a low isthmus less than a cable in width. From this cause the eastern extreme takes the form of a ⊣-shaped peninsula. The whole island is but moderately elevated and is well wooded. In approaching from the northward and westward it is difficult to differentiate the island from the main shore behind it—which may serve as an explanation of an apparent discrepancy by which, to the southern extremity of this island, Vancouver's name of **Point Woodhouse** has been applied.‡

The point is but moderately high, wooded, and in its neighborhood are several small rocky islets. In line with the point and **Impassable** (**Nepropusknoi**) **Islet**, about half a mile **S SE.** from Point Woodhouse, is the *Vasilieff Shoal*, marked in rough weather by a breaker. It is *Vasileva Rock* of British Admiralty Chart No. 2337.

W SW. from the western point of Biorka about two miles lies *a sunken rock*, ten feet below the surface at low water. It is stated by Russian navigators familiar with this locality that a heavy sea breaks only once in five or six minutes, and in but one spot,—leading to the inference that the rock must be very pointed. Tebienkoff indicates twenty-seven fathoms near to it and forty-nine midway between it and the islet at the western end of Biorka. The extensive rocky patch laid down on the British Admiralty Chart No. 2337 does not exist, according to the Russians, and no evidences of any such patch have been observed here by the U. S. Coast Survey parties.

Lieutenant Symonds, of the U. S. N., locates this rock one mile and a half **W SW.** from the small islet at the western extreme of Biorka Island, from information obtained from the pilot of the steamer *California*, who passed the patch twice a month and has taken many bearings upon it; and Lieutenant Symonds adds, "I am satisfied that the position is reliable and relatively correct."

The shores of Biorka are mostly bold-to but infested by numerous pointed rocks, also having deep water about them, and which extend off the shore to about a quarter of a mile. Part of the northern and western coast is free from these obstructions, and the depth of water in general half a mile from the shores varies from twenty-five to forty fathoms.

The southern indentation is merely a small rocky cove, but the northern one is a good harbor and has received from the U. S. Navy the name of Symonds§ Bay. It is about three-quarters of a mile long north and south and a third of a mile wide, with a regular shore-line, and a regular bottom shelving gradually from about twenty fathoms at the entrance up to

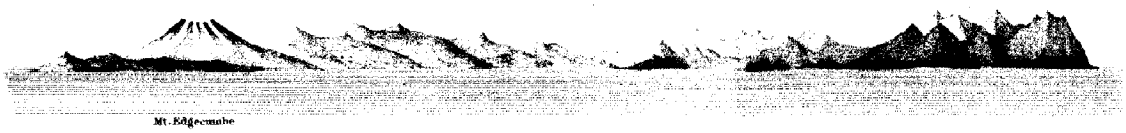
Symonds Bay.

* To which the name of **Kluchev Bay** has been erroneously transferred on some charts.

† It was named by the **Russians** and is the **South Island** of Lisiansky.

‡ Vancouver gave this appellation, erroneously written **Wodehouse** by some authorities, to the "southeast point of a spacious opening," whose northwest point was formed by Cape Edgecumbe, and which comprised Dixon's Norfolk Sound. From the bearings and distance given by Vancouver it seems evident that he applied the name to some part of the high land immediately to the westward of the western part of Crawfish Inlet, which, from his distance from the shore and the consequent invisibility of many of the low islets of the Necker group, appeared like the southeastern headland of the sound. His text and charts are in accord on this question. As early as 1818, however, bearing in mind the intention rather than the erroneous location, the name was applied on the chart of Sitka, made by Russian naval officers and forming No. XIX of the old Russian series, to the south point of Biorka Island, which has since been known by the name of **Woodhouse**.

§ This bay was surveyed August 22 and 23, 1879, by Lieutenant F. M. Symonds, U. S. N., and Master G. C. Hanus, U. S. N., of the U. S. Ship *Jamestown*, Commander L. A. Beardslee, and named **Symonds Bay** by the Navy Department. The above description is from the MS. map of Symonds and Hanus, furnished by the Navy Department to this Office, and since issued by the U. S. Coast Survey as Harbor Chart No. 724.

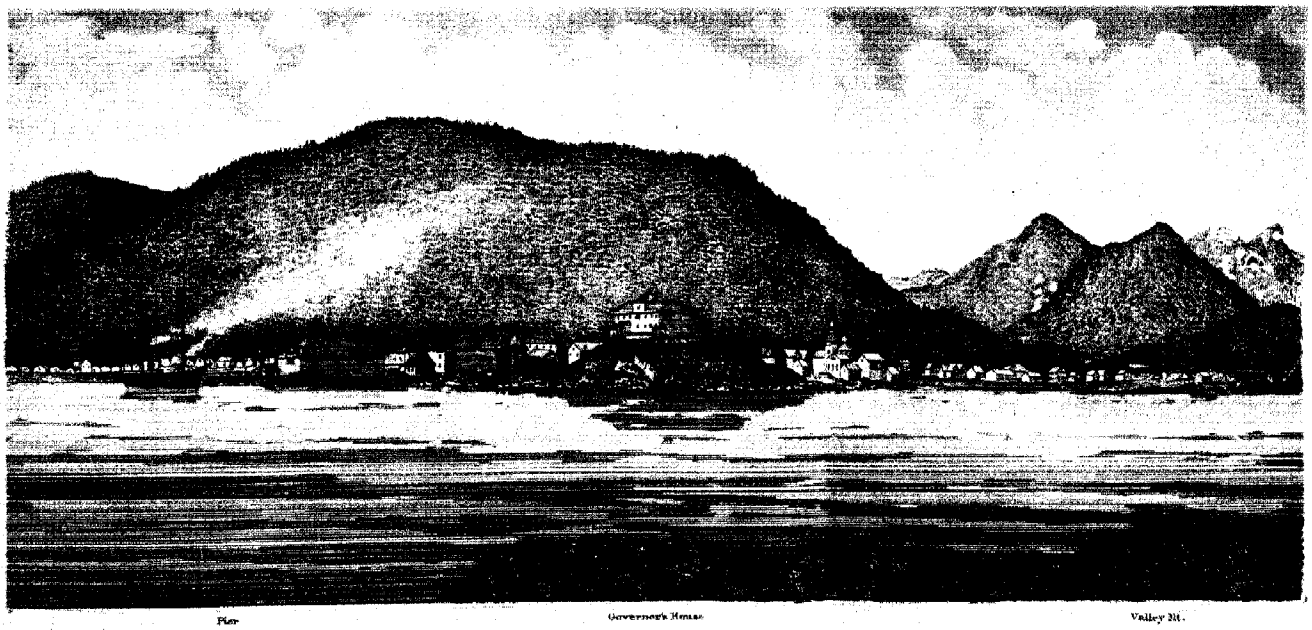


Sitka or Norfolk Sound, Mt. Edgecumbe N W by W 24 Miles

(From a Sketch by Bligh in Cook's Voyage.)



Sitka from the Western Anchorage. 1867.



Sitka from the Eastward

(From a Photograph in 1860.)

the sand-beach at the head. The entrance to the bay is distinctly marked by two islets, **Hanus Islet** marking the eastern and **Entrance Islet** the western head. Hanus Islet, low and bearing a few trees, is barely separated from the shore of Biorka, while Entrance Islet, bare and rugged, only admits of the passage of canoes between it and the shore. Hanus and Entrance islets are a half mile apart and bear from each other **SW.** by **W.** $\frac{1}{2}$ **W.** and **NE.** by **E.** $\frac{1}{2}$ **E.** The bay is perfectly sheltered from all winds except those from **W NW.** round by **N.** to **N.** by **E.**, and the holding-ground is good.

At the head of the bay is a fine beach of white granite sand, and behind this a house and a patch of low land, where a vegetable garden has been successfully cultivated for several years. It is fenced in to keep out the deer which abound on the island. Fresh water and wood are abundant. The watering-place is on the eastern shore, about a quarter of a mile south of Hanus Island.

SAILING DIRECTIONS

FOR SYMONDS BAY.

The only directions necessary for entering are to keep out of the kelp and avoid approaching the shores within a cable; to steer for the middle of the white sand-beach about **S SE.**, and anchor immediately seven fathoms are obtained. In this position the middle of Entrance Islet will bear **NW.** by **W.** $\frac{3}{4}$ **W.** five and a half cables; the middle of Hanus Inlet **N.** five cables, and the house on the beach **S.** $\frac{1}{4}$ **W.** three cables.

This cove, recommended by the Russians as a proper site for a pilot-station, would also serve as a good port of refuge for any navigator who did not choose to venture on the intricacies of the Sitka channels in a southeaster. The use of the lead in approaching it, however, would be advisable, although there is no special reason for believing that any unknown dangers exist in its approaches.

In some cases it is possible that a vessel, by reason of disability or otherwise, might find it impracticable to weather the island of Biorka in a southerly gale. It is therefore not unnecessary to mention that relief might be afforded by a rather narrow, but apparently clear, passage which exists between Biorka and the islands eastward from it. This passage is half a mile wide at its narrowest part, and from a point off its entrance half a mile east from the *Vasilieff Shoal* the course is for the **SE.** end of Peisar Island bearing **N.** $\frac{3}{4}$ **E.**

This, according to the Russian charts, carries through the passage clear of known dangers, when shelter may be had in the cove or under the lee of the north shore of Biorka. Lieutenant Symonds cautions navigators against using this passage, (which should, indeed, until a survey is made, only be done as a matter of necessity,) saying that it is "full of *sunken rocks* and *dangerous breakers;*" but no survey of it seems to have been made by him. Russian navigators pronounce it navigable, and their charts do not indicate any obstructions in the channel referred to. While it is not recommended except as a last resort in the particular case mentioned, it might then serve a useful purpose, especially as at such a time any dangerous rocks would be marked by breakers.

SITKA SOUND.

Biorka Island forms the real southeast headland of Sitka Sound,* whose opposite extreme is **Cape Edgecumbe,** distant about thirteen miles from Point Woodhouse.

Sitka Sound extends from its entrance as above described fourteen miles in a northerly direction with a width, east and west, varying from seven to ten miles. The east and north shores are fringed with numerous islands and indented by large bays and entrances; the west shore is more compact but encumbered by numerous rocks within a mile of the coast. The shores are everywhere wooded, rendering it difficult to distinguish the wooded islets when they are on with the land. The latter usually rises rapidly from within a short distance of the sea and culminates in broken hills or small mountains, none of which attain a remarkable height, and the recesses of which—for the most part guarded by a dense vegetation, wet and spongy soil, and precipitous ravines—have never been penetrated by man.

The northern and western headland of the sound above mentioned is **Cape Edgecumbe.**†

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*This body of water, originally named **Eusenada del Susto** or **Bay of Terrors** by Bodega and Maurelle in August, 1775, was called **Norfolk Sound** by Dixon, who made a tolerable sketch of it in 1787, and whose name was adopted by Vancouver. This name under ordinary circumstances should take precedence of the others, but since the appellation of **Sitka Bay** or **Sound,** applied by the Russians in 1809, has been adopted by the British Admiralty Office on their charts, and subsequently on most American charts, it does not seem that the convenience of navigators would be served by a return to the earlier and at one time more widely adopted name. It was also termed **Tchinkitanay Bay** by Fleurieu in his account of Marchand's voyage.

†Named by Cook in 1778, and which has also been written **Edgcumbe, Edgecombe,** &c., by different authorities. It was named **Cabo del Engaño** by Bodega in 1775, (sometimes erroneously written **Enganno**;) **Point Lazaria** or **St. Lazarus** by old Russian authorities, who identified Mt. Edgecumbe with Chirikoff's Mt. St. Lazarus; **Trubitsina Cape** (named by Baranoff for Boatswain Trubitsin, one of Chirikoff's officers,) and **Sitka Cape** by Russian authorities as early as 1809. On some recent charts a compromise has been attempted by giving to the eastern angle of the cape the name of **Sitka Point,** while reserving the original name of Cook for the western angle or main cape.

The cape is bluff near the water's edge, moderately elevated and densely wooded, having the appearance of a table-land. From its whole front, including the eastern angle known as Sitka Point, *rocks* and *breakers* extend seaward from a quarter to two-thirds of a mile. But in ordinary or rough weather these rocks are marked by a constant breaker, the sound of which is audible for some distance even in a dense fog. *With flood tide a strong current is said to set directly upon these breakers.*

This cape is readily distinguished from any other on the coast by its proximity to the mountain of the same name, which has justly been accorded the title of "the landmark of Sitka Sound."

Mt. Edgecumbe was named by Cook* at the same time as the cape, from which it is distant about four miles in a **N NE.** direction.

This mountain is not so remarkable for its height as for its appearance. An U. S. Coast Survey measurement in 1867 placed the elevation at 2,855 feet above the sea, which is somewhat less than the earlier estimates, but agrees very well with modern Russian determinations. From the sea it appears like a flat-topped mountain with sides descending at a gentle inclination toward the plateau at its base. Between the mountain and the sea at Cape Edgecumbe are two smaller knobs. The flattened appearance of the peak arises from the fact that the apex is occupied by a crater, said to be two thousand feet in diameter and about two hundred feet deep; and the horizontal rim of the crater seen in profile gives the effect of a horizontal crest or table. From the summit various deep gorges or ravines radiate, and these are invariably filled or partly filled with snow, giving rise to torrents and cascades. When the winter snows have not disappeared these furrows can barely be distinguished. Later in the season the upper part of the mountain is free from snow except in the furrows, where the white snow makes a remarkable contrast with the red volcanic débris of which the cone is formed. The mountain once seen in this condition is always remembered. It is only wooded near the base, as the crumbling volcanic rock near the summit admits of little or no vegetation. It is situated upon **Kruzoff Island**,† whose southern and eastern shores form the northern and western boundaries of Sitka Sound.

Kruzoff Island extends about eighteen miles in a **NW.** by **N.** and **SE.** by **S.** direction with an average width of about six miles. It is of rugged topography, but the peaks do not attain any great altitude, Mt. Edgecumbe being the highest. It is rather densely wooded and contains several native settlements.‡

Sitka Sound derives its chief hydrographic importance from the port of Sitka, formerly known as New Archangel, and which is situated in the eastern portion of the sound. It appears more desirable, however, first to briefly describe the northwestern and southeastern shores of the sound before proceeding to directions for approaching and navigating the port itself and its immediate vicinity.

From Cape Edgecumbe the shore of Kruzoff Island trends nearly seven miles in a **NE.** by **E.** direction, with unimportant irregularities, to a low point known as **Point of Shoals.**§

Dixon indicates an *impassable shoal* extending three miles in an **SE.** direction from the point and including the Low Islets of modern charts. These islets have been placed on British Admiralty Chart 2337 (corrected to May, 1865) **E NE.** from the point, not extending off-shore more than a mile at their outer edges, and with no obstructions indicated between them and the point. But Tebienkoff's Chart XXXVIII of 1850 indicates very plainly an off-shore extension of shoals from the point toward the Low Islets, and a long reef extending from the shore a little to the northward of the Point of Shoals proper, also toward the Low Islets. Hence it is evident that prudence requires that no attempt should be made to pass between the Low Islets and the Point of Shoals until actual soundings have demonstrated its practicability.

Shoals.

It may also be mentioned that the flood tide is said to set strongly on to and along this shore from Cape Edgecumbe eastward and northward, so as to render a position near it dangerous for a vessel in calm weather or during a heavy southeaster.

Current.

* It was seen in 1775 and named **Mt. San Jacinto** by Bodega, a name adopted as **Mt. Saint Hyacinth** by La Perouse; and was called **Mt. St. Lazaria** or **Lazarus** on early Russian charts, as of Chirikoff.

† This was named **Pitt Island** by Portlock in 1787, a name since applied to, and now in common use for, one of the larger islands of the Columbian Archipelago. According to Grewingk the names of **St. Lazaria, San Jacinto, Edgecumbe, Pitt, Sitka and Kruse, Crooze or Kruzoff,** have successively been applied to this island, the latter in honor of Admiral Kruse by Lisianski in 1805.

With the exception of Pitt and Kruzoff, these names have not been found on any charts in common use, and there is some doubt as to whether they were ever applied to the island itself as distinguished from its widely known volcano and adjacent cape. It has also been called **Tleekh Island** by Tebienkoff, a name which appears to have been derived from native sources. The name **Sitka** seems only to have been applied to this island by the early Russian traders and is not found on any chart.

‡ According to some authorities this was the first land seen by Bering's associate, Chirikoff, in 1741, toward which his boats went in, never to reappear. Other hydrographers, and perhaps these are in a majority, think that Chirikoff's land-fall was farther to the northward.

§ **Otmeloi** of Russian authorities, and **White's Point** of Dixon in 1787; **First Point** of the English edition of Lisianski; sometimes called **Shoals Point,** and by early Russian authorities **Outer Point of Shoals,** in contradistinction to another (inner) point of similar name about five miles to the northward. It is **Low (Nixmenia) Point** of Tebienkoff.

Two and a half miles **S SW.** from Point of Shoals and about three and two-thirds miles **E NE.** from the angle of Cape Edgecumbe known as Sitka Point, lies **St. Lazaria Island**,* of small extent, hour-glass shaped, rounded, rather high and wooded.

The nearest shore of Kruzoff Island is about a mile distant. Dixon here indicates rocks, draws a danger-line, and reports seeing a quantity of rock-weed.†

Later charts indicate a clear passage between the island and the shore with ten or twenty fathoms quite close to the island. **NW.** by **N.** from the Low Islets a short distance Dixon found anchorage in eight fathoms, over a sandy bottom, about three-quarters of a mile from shore. In this position the adjacent land forming the bay in which they were sheltered bore from **S. 3° W.** round by **W.** to **N. 3° E.**, while to the southward and **SE.** by **E.** the anchorage was found well sheltered by beds of growing kelp upon the shoals already referred to. This shelter is also clearly indicated on Tebienkoff's chart, but without soundings. The approach to it is not incommoded except by the narrowness of the passage between Vitskari Rocks and the Low Islets, which is nevertheless apparently over a mile in width. **Anchorage.**

From Point of Shoals the shore trends to the northward four and a half miles to the **Inner Point.**‡ This point is of little consequence except as having *foul ground* extending off from it in a westerly direction to a distance of less than half a mile. Hence the shore trends **NW.** by **N.** ¾ **N.** a mile and a quarter to a small point known as Monument Point, of little importance, but marked by some rocky pillars or pinnacles which have been called the Monument Rocks. Beyond them, bearing in the same direction from Inner Point and at a distance of two and a half miles from the latter, lies **Kamennie (Rocky) Point** of early Russian authorities, which is also guarded by a two-cable-wide patch of *foul ground* close to and parallel with the shore, and which forms the southwestern headland of the entrance of the northward leading passage called Hayward Straits by Portlock.

A mile and a half **NE.** by **N.** from Kamennie is **Kresta (Cross) Point**,§ which forms the opposite and southeastern headland. This point consists of a promontory, apparently high, rounded and wooded, with rocky shores. Half a mile south from Kresta Point is **Guide Islet** or **Ukazatel**,‖ high and wooded; but represented as lately as July, 1882, on British Admiralty Chart 2337 as a rock awash.

Two and a half cables **SE.** from Kresta Point lies a *sunken rock* with nine fathoms between it and the shore. In these inner waters, where a sea sufficiently high to cause breakers is an uncommon occurrence, such an obstruction to navigation is much more dangerous than in a locality where it might receive the oceanic ground swell. Such rocks, however, are usually marked by kelp. **Rock.**

NE. by **E.** ¼ **E.** somewhat over three miles from Kresta Point lies **Lisianski Point**, not named on the charts, high, bold, heavily wooded, and forming the **NW.** headland of Katliana Bay. Between this point and Kresta Point a wide bay exists, containing the Siginak group of many islands and constituting the main entrance to two of the adjoining straits. From three to five cables east from Lisianski Point lies the shore forming the opposite point of entrance of Katliana Bay; but, except Tebienkoff,¶ none of the charts represent a well-marked point or headland at this locality.

Katliana** Bay extends two or three miles in an **N NE.** direction, when it becomes enlarged by a prolongation from its head in an **E.** ½ **N.** and **W.** ½ **S.** direction to the extent of a mile either way. The western end dwindles to a narrow creek with six to nine fathoms over a muddy bottom, and the head of the bay gradually deepens to forty-five or fifty fathoms at its eastern extreme. There are also two or three islets near the northern shore. The form of this bay is differently represented on different charts, but its main stem does not appear to exceed half a mile in width, nor does the basin at its head much exceed a mile. **SW.** ½ **W.** from Lisianski Point six cables lies the northern extreme of the northern islet of a small group known as the **Gavanski (Harbor) Islets** by the Russians. This group comprises two principal islets, **Big** and **Little Gavanski**, two high rocks—the **Border (Griada) Rocks**—and some banks and shoals. The group is quite compact, trends in an **N.** ½ **W.** and **S.** ½ **E.** direction a mile and a quarter with a width not exceeding half a mile. The passage between their northern extreme and Point Lisianski is about four cables wide in the clear, and has twenty to forty fathoms water. The passage to the southward of the group is from five to seven cables wide, but *contracted by shoals* on either hand and one in mid-channel. Between these obstructions narrow pas-

* This island was so named as early as 1809, by Russian hydrographers, to retain the name supposed to have been applied by Chirikoff in 1741 to the mountain and cape of Edgecumbe; and even applied by some to Kruzoff Island as a whole. From the former association of names it also became known as **Cape Island (Muisoffski)**; it was named **Robin Island** by Dixon in 1787, though the name does not appear on his chart.

† Dixon's voyage, p. 179.

‡ Called by the Russians **Inner Point of Shoals (Otmeloi)**, **Second Point**, or, on British Admiralty Chart No. 2337, **Rocky Point.**

§ Named by Vasilieff in 1833.

‖ Named **Krestofskoi Islet** by the Russians in 1809, and correctly mapped by them.

¶ Chart XXXVIII.

** Also called **Katlianofa Gulf** by the Russians as early as 1809, and on English charts **Kotleana Bay**. It was named by Lisianski after **Katlian** or **Kotlean**, one of the native chiefs of Sitka in 1809.

sages carry fifteen or sixteen fathoms. The rocks and the eastern shores of these islets appear for the most part bold-to. From the southeastern headland of Katliana Bay the shore trends to the southward for three-quarters of a mile, then southwestward about the same distance to **Gavanski Point** of early Russian charts, forming a cove or bay. From the point which is the **SW.** extreme of the cove the shore trends in a generally **S.** by **E.** direction, with minor irregularities, a mile and a cable to a sandy point. Off this piece of shore numerous small islets and rocks extend about half a mile in an easterly and westerly direction, or in a general way toward the Border Rocks, between which and the outermost of the islets from the shore remains a clear passage three and a third cables wide, with abundance of water.

Old Harbor.

The sheet of water inclosed as above by the Baranoff shore and islets, Lisianski Point and the Gavanski Islets, forms what was called by the Russians the **Bay of Starri-Gavan,*** especially that part of it included by the cove above referred to. Here a stream comes in, and on a bank which occupies much of the cove, anchorage may be had in from fifteen to thirty fathoms, mud and shell. A small cove affords an excellent boat landing, and on the shore at no very distant date were some Indian summer houses and a cenotaph. The latter was in commemoration of the massacre of the inhabitants of the first Russian settlement. More recently a salmon cannery was established here, with a trading establishment. In 1799 the first post was here erected by Baranoff on the shore of this cove, and called **Fort Archangel Gabriel.**† In May, 1802, the natives attacked this post and put the inmates to death. Starri-Gavan is well protected in all weathers and easily approached. Its chief inconvenience is that it affords anchorage to but a small number of vessels and those of moderate size, while the winds, which agitate the lower portion of the sound, often fail to blow home in this vicinity, and the navigator loses time by reason of calms. This harbor, now seldom occupied, is most easily entered from the northwestward between the Gavanski Islets and Point Lisianski. No instructions appear to be necessary for entering it in this direction. The existence of some known dangers, and the possible presence of more yet to be discovered, render it inadvisable to attempt the other entrances without a good local pilot, or until a reconnaissance has been made. The sandy point mentioned as forming the southeastern extreme of Starri-Gavan is called **Halibut Point.**‡ It is low and fringed with foul ground extending off a cable and a half. **W.** ½ **S.** a mile and a quarter from the point is the northern point of **Middle Island.**§ This is the largest of those islets which, congregated in a curve parallel with the Baranoff shore, defend it from the ground swell and form the anchorages of Sitka or New Archangel. This island is about a mile and two-thirds long **N NW.** and **S SE.** and a third of a mile wide. Its northern portion is high, the southern part nearly level, and the whole wooded. Trending nearly parallel with Middle Island and extending from half a mile to a mile westward from its western shore are a number of islets or islands, of which the most important are **Crow Island**‖ a mile long, less than a quarter of a mile wide, and having *a sunken rock* a cable northward from its northern end; and **Loon Island,**¶ less than half the size of the last mentioned and farther to the **SW.** The most western of all is **White (Bielie) Rock**, an insignificant islet, close to which sixty fathoms may be had.

To the southward and eastward of Middle Island a myriad of islets extend to the distance of a mile and a half or less north and west from the passage to the western anchorage of Sitka. These islets are of no individual importance, many of them being mere rocks sustaining a tree or two, but most of them, though not accurately surveyed, have been named, and the group from a very early date were known to the Russians as the **Kasiana Islets;**** the northeasternmost of them bears about **E.** ½ **N.** a mile from the **SE.** extreme of Middle Island. The easternmost is **Usher Rock,** named by the U. S. Navy in 1879, the southeasternmost **Sentinel Rock,** also named by the U. S. Navy.

The former bears from the most northeastern of the Apple Islands about **SE.** three-quarters of a mile, and from it Sentinel Rock lies about **S.** ½ **W.** half a mile, with *sunken rocks* scattered south from it two or three cables farther. Half a mile westward from Sentinel Rock lies **Bare Rock,*** and two cables farther **Black Rock,**†† which, together with those previously mentioned, form the southern and eastern buttresses of the Kasiana group.‡‡

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* **Old Harbor Bay.**

† Grewingk has erred in stating that the first post was established on Kruzoff Island. This mistake appears to have arisen from the habit of the early traders of anchoring in Port Cross on the Kruzoff Island side.

‡ **Paltoose** of the Russians of 1809; and also called **Pestchani** or **Sandy Point** on some later charts.

§ **Sredni Island** of the charts of 1809, **Iabloshni** or **Apple Island** of the Russian and English charts of 1848.

‖ **Varonie** of Russian authorities, erroneously translated **Blue Island** on British Admiralty Chart No. 2337.

¶ **Gagari** or **Gagarin Island**, named by the Russians, also erroneously translated **Jet Island** on the British Admiralty Chart No. 2337, as above.

** The northeastern cluster of these is the Iablochni or Apple Islands of Tebienkoff, Chart XXXVIII, 1850, and the U. S. Coast Survey Harbor Chart No. 708, 1881.

†† Golo-kamennoi and ** Makhnak of the Russians in 1809, according to Vasilieff's chart.

‡‡ Other names applied to members of the group, but which it seems unnecessary to describe until better surveyed, are the **Parker Group** (northward from Black Rock), **Novi Island** (NE. from the last), **Hall (Halli) Rock, Chaichei (Gull) Island, Kamennoi (Stony) Island, Nerpichi (Seal) Islands, Nachlenhnoi (Chief) Island, Open (Atkritoi) Rock, Empty (Pustiia) Island,** and **Watch (Bedennoi) Islands,** all named by Vasilieff as early as 1809, except the first mentioned.

A line drawn through Sentinel and Usher rocks bounds the western channel to Sitka on the west. Between Middle Island and the northern margin of the Kasiana Islets on the one hand, and the shore of Baranoff Island on the other, there extends a strip of water clear of known dangers and averaging three-quarters of a mile wide.

From Halibut (or Pestchani) Point the shore of Baranoff Island trends nearly **SE.** $\frac{3}{4}$ **E.** a mile and a half, thence about as much farther **SE.** by **E.** $\frac{3}{4}$ **E.** to the point upon which the citadel of the second Russian settlement, New Archangel, was erected, and at which the principal wharf and landing for the present town is situated. Thence to Marshall Islet, forming the northern point of entrance to Silver Bay or Screbrennikoff Arm,* the general trend of the shore, overlooking numerous minor indentations, is **E.** $\frac{1}{2}$ **N.** about two and a quarter miles. Eastward from the inner end of the western channel the space between the various groups of islets and the Baranoff shore rapidly diminishes in width **N.** and **S.** from half a mile at the former locality to not over a cable abreast of the pier at Sitka itself, eastward of which it again widens to its junction with the eastern channel. The group of islands which protects the anchorage of Sitka is about two and a half miles long in an east and west direction and a mile and a half broad. It is divided into two nearly equal portions by the middle channel, which extends from the sound in a northerly direction, terminating near the western end of the eastern anchorage. The group is bounded on the west and northwest by the western channel, and on the east and southeast by the eastern channel leading to the harbor.

In the western division of this little archipelago there are more than thirty islets and rocks, of which the largest, forming the southern shore of the western anchorage, is **Japonski Island,**† a mile in length **W.** by **S.** and **E.** by **N.** and nearly half as wide. This island is moderately low, partly wooded, and near its eastern end was situated the meteorological and physical observatory, maintained here by Russia for many years—the building now forming part of the coal depot of the U. S. Navy. Thirty-one metres **S.** $43\frac{3}{8}$ **W.** from the southeastern corner of this old building is the new astronomical station of the U. S. Coast Survey,‡ established in 1880, and situated in

Latitude	57° 02′ 52″.6 **N.**
Longitude	135° 20′ 19″.8 **W.**

From it the flag-staff on the old governor's house bore, in 1880, **S.** 77° 45′.5 **E.** true, and **N.** 73° 10′.7 **E.** by compass, the resulting magnetic declination being 29 04′.8 easterly.

The next in importance in this division is **Makhnati (Rough or Rugged) Island,**§ which lies about a mile south from the western end of Japonski Island on the southern margin of the group, and serves as a landmark for inward bound vessels. Upon it the U. S. Navy in 1880 erected a pyramidal wooden mark at the top of the bluff, rising seventy-two feet above the water, and called by them the **West Beacon.** The island is thirty feet high and of small extent, with a rocky southerly face of dark color, and tolerably high spruce trees covering its surface. The height and dark color of the bluff contrasted with the surf at its base, together with its southern position immediately fronting the sound, render it the most conspicuous of all the islets, often visible when the others are covered with fog, and the first to appear when the fog rolls inland before a westerly breeze. The beacon is a little more than a mile and five-eighths **SW.** $\frac{1}{2}$ **S.** from the end of the pier at Sitka.

South two and a half cables from the beacon is *Beacon Rock* with ten feet of water over it at low water.

NW. $\frac{1}{2}$ **N.** four cables from the West Beacon is **Signal Island,**‖ of small extent, on which in the early part of the century a beacon was lighted on the arrival of a vessel in the sound. The myriad of islands and the deceptive appearance of the land from which the former are not readily distinguished, even by those familiar with the region, rendered the column of smoke by day or fire by night almost equally serviceable. It is about a mile and three-quarters **SW.** by **W.** from Sitka pier.

From Signal Island **N.** $\frac{1}{2}$ **W.** eight cables, forming the turning point of the Western Channel, is **Battery Island,**¶ formerly occupied by an old earthwork of defense now obliterated. It is about a mile and three-eighths **W.** $\frac{1}{4}$ **S.** from Sitka pier.

Turning (Poverotnoi) Islet, of small extent, is of interest only as being the northeasternmost of the Japonski Group, and as forming the western extreme of the northern mouth of Middle Channel. The other principal islands included in the western division which it does not seem necessary to describe

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* Named for Rufus Serebrennikoff, who lost his life exploring the Atna or Copper River in 1848; his name has been spelled **Serebrnnikoff** and **Serebrinikov.** British Admiralty chart calls the bay **Serebrinikov Cove,** and the name of Silver Bay was applied by the miners who discovered mineral lodes of precious metals near its eastern extreme since the American occupation.

† Named by the Russians **Japanese** or **Yaponskoi Island** from the residence there of some Japanese sailors who were rescued from the storm-drifted hulk of a Japanese junk cast on these shores in 1805. It has also been written **Japonskoi Island.**

‡ The new station is composed of three wooden piers solidly imbedded in the ground and reaching to the surface, and in the center a wooden post solidly set extending three or four inches above the ground, with a tack marking the center of the station.

§ Also entered on charts of not recent date as **Lisanoi (Woody** or **Wooded), Mokhnatoi,** or **Moknatoi Island.**

‖ **Maiachnoi (Signal) Island** of Vasilieff in 1809, **Mayastechnoi,** and **Signal-light Island** of other charts.

¶ **Batareinoi** of the Russians in 1809.

in detail, are, from east westerly: **Aleutski, Harbor,**[1] **Alice, Love, Charcoal,**[2] **Fruit, Fritz,** and **Volga islands**; **Alexander** and **Nepoverotnoi rocks**; **Stewart, Nevski, Smith, Reshimosti, Virublennoi, Gold, Sasedni, Kirushkin, Mogilnoi**[3] and **Line islands,** and **Nicholson Rocks.**

Southwest from Japonski Island and between it and the Sasedni Group, opening to the Western Channel, is a clear space half a mile long **E.** and **W.** and half as wide, with from five to thirteen fathoms water, which has been named **Whiting Harbor** by the U. S. Navy. The bottom is uneven, but the holding-ground is said to be good and the anchorage to be especially protected against northeasterly gales. No directions other than the chart* appear to be necessary for it.

The **Galankin Group** lie to the eastward of the **Middle Channel,** between it and the **Eastern Channel.** The largest one of them is **Galankin Island,**† about six cables long **W NW.** and **E NE.,** the northern end being three-quarters of a mile about **SE.** from the pier at Sitka. It is about a cable and a half in width, rather low and wooded. The next in size in the Galankin Group are **Bamdoroshni** and **Whale**‡ **Islands,** both southwest from Galankin Island, fronting on the Eastern Channel, moderate in height, irregular in form and wooded. Their southeastern extremes are about three cables apart **NE.** and **SW.,** and nearly the same distance intervenes between the **SE.** end of Galankin and that of Bamdoroshni, and also on the other hand between the **SE.** end of Whale Island and that of the group of rocks known as the **Kayak Islets.**

Eight cables **NE.** from the **SE.** end of Galankin lies a *rocky patch* in four fathoms. It is nearly midway between Galankin Island and Marshall Islet on the Baranoff shore, in the same trend. About five and a half cables north from the **SE.** end of Galankin are the **Twins,** forming the inner northern extreme of the Eastern Channel, two small rocky islets. A quarter of a mile north of the **NW.** end of Galankin is **Kutkan Island,**§ which forms the **NW.** extreme of the groups and the eastern inner extreme of the Middle Channel. This small islet forms the **NW.** extreme of the group and the eastern of the two northern extremes of Middle Channel. About a mile **SW.** from the **SE.** point of Galankin lies the eastern end of the **Kayak Islets,** which at high water comprise a number of rocks separated by shoal water forming a cluster about three cables **W NW.** and **E SE.** This forms the southern and western extreme of the Galankin Group and the northern point of the outer entrance of the Eastern Channel. From the western point of this reef **W.** two and a half cables lie the **Passage Islands,**‖ forming the southern and western extreme of the Galankin Group and the northern point of entrance to the Middle Channel, as recommended by the U. S. Navy. Two and a half cables **W.** from these lie the **Surf Rocks,**¶ which are connected by a reef or shoal at low water and on each side of which there is a navigable channel, forming an entrance to the Middle Channel. Four cables **N NE.** ½ **E.** from the principal Surf Rock lies *Keene Rock*** with fourteen feet of water over it at lowest tides. This rock consists of a patch about seventy-five yards long **SE.** by **S.** and **NW.** by **N.,** which has at the northern end several pinnacle heads clustered together in a space ten yards in extent with sixteen feet over it at low water, falling away at twenty yards distant to seven fathoms, steep-to, and having at the southern end a pinnacle with fourteen feet over it; in summer it is sometimes marked by kelp. This rock has long been known to local pilots, and was reported to Lieutenant Craig, U. S. S. *Alaska,* by Pilot J. W. Keene, in 1879, by whom it was made known to the Navy Department.

Rocky Patch.

Keene Rock.

DIRECTIONS FOR AVOIDING KEENE ROCK.

For vessels drawing less than twelve feet of water this rock does not constitute a serious danger in entering the Middle Channel by the old passage between Surf Rocks and Makhnati Island. Larger vessels should not attempt this passage.

In entering here, round Surf Rock as soon as possible and bring it to bear **SW.** ⅝ **S.** astern, which course made good carries clear of all dangers into the eastern anchorage.

From Volga Island **E.** by **N.** ¼ **N.** a cable and two-thirds lies the northeastern edge of a patch, called the *Mitchell Rocks,* nearly in the fairway of the northern part of the Middle Channel. They have seven to eleven feet of water over them at lowest water and in summer are usually marked by kelp.

[1] **Gavanskoi** of Vasilieff, [2] **Ugolnoi** of Vasilieff, [3] **Mogilnoi (Grave) Island** of Vasilieff in 1809, **Shell Island** of a later chart.

* U. S. Coast Survey Chart No. 708 of 1881, or British Admiralty Chart No. 2348, edition of 1882, *not earlier editions.*

† Named by Tebienkoff, also appearing on charts as **Peschani** or **Sandy Island** or Islet.

‡ **Kitovei (Whale) Island** of Vasilieff in 1809, also written **Quitoway,** and by error Whalebone Island, on some charts.

§ **Kuchkan, Kukhkan, Popoff, Stanovoi** or **Garden Islet,** named by the Russians after a noted Indian chief of Sitka who freed all his slaves and embraced Christianity.

‖ **Prokhoda (Passage) Islands** of Vasilieff in 1809; **Prokodi, Goloi (or Bare) Islands** of others.

¶ **Polivnoi** or **Burun Rocks** of the Russians since 1809. Meaning surf-washed rocks; by error, **Bolivnoi Rocks.**

** The position of this rock, according to U. S. N. Hydrographic Notice, No. 35 of 1879 and No. 5 of 1880, being somewhat discrepant, the completed chart of the officers of the *Jamestown,* U. S. Coast Survey Harbor Chart No. 708, and the copy issued by the British Admiralty Office, being No. 2348 of 1882, has been taken as correct for the purposes of this description and the subsequent sailing directions.

DIRECTIONS FOR AVOIDING MITCHELL ROCKS.

Surf Rocks astern **SW.** $\frac{5}{8}$ **S.** carries in in mid-channel, or, from a point one hundred yards west from Rose Rock keep the middle of Turning Island **N.** by **E.** until the middle of Volga Island bears **SW.** by **W.** $\frac{1}{4}$ **W.**, when a **NE.** by **N.** course carries clear into the eastern anchorage.

One cable **NW.** by **N.** from the northwesternmost dry rock of the Passage Islands is a patch marked by kelp, consisting of *submerged rocks* with ten feet of water over them at lowest water, *erroneously marked two and three-quarters fathoms* on the 1882 edition of British Admiralty Chart No. 2348. They have five to ten fathoms immediately about them.

In passing between the Passage Islands and Surf Rocks the navigator should avoid going eastward of mid-channel, Volga Island bearing **NE.** by **N.** $\frac{3}{4}$ **N.**, until Surf Rocks bears **SW.** by **W.** astern. It would be better to avoid this passage entirely.

The southeastern margin of the Galankin Group has several off-lying dangers. **E.** $\frac{1}{2}$ **N.** from the easternmost Kayak Islet, **SW.** by **S.** from the eastern tangent of Galankin Island and about a cable and a half **S.** by **E.** from the southern shore of Whale Island, is *Simpson Rock*, discovered and named by the officers of H. M. S. *Devastation* in 1862. It has about seven feet of water over it at lowest water, *by error two and a quarter fathoms* on the 1882 edition of British Admiralty Chart No. 2348.

About six and a half cables **NE.** $\frac{3}{4}$ **E.** from *Simpson Rock* is *Tsaritza Rock*, named for a Russian vessel which struck upon it. There is eight feet of water over this rock at lowest water, and it is almost exactly in line with the southern tangent of Bamdoroshni Island **E.** $\frac{1}{2}$ **S.** and **W.** $\frac{1}{2}$ **N.**, at its intersection by the eastern tangent of Galankin Island **S.** $\frac{3}{4}$ **E.** and **N.** $\frac{3}{4}$ **W.**, and about two and three-quarters cables from the nearest point of the shore of each of them.

Due east from the Twins about six cables is *a rocky patch* in four fathoms, which at low water should be avoided by vessels drawing over twenty-one feet of water.

Other islets and rocks of the Galankin Group, which it seems superfluous to describe in detail and for which the navigator is referred to the recently issued charts, are the **Ball** group, which includes among others the **Twins**[1] and **Horn**[2] **Island**, the **Gilmore**, **McClellan** and **Beardsley** groups, **Breast**, **Katz** and **Sheep**[3] **islands**, **Ferabee** and **Rose rocks**, **Rockwell Island** and the above-mentioned Kayak[4] Islets.

Southeastward from the fairway of the Eastern Channel, between it and the shores of the sound, are several islands and groups of islands, together with one dangerous rock. The latter, named for a ship which struck upon it in 1855, was called by the Russians *Zenobia Rock*, and has been on the earlier charts placed in different positions or even in two places on one and the same chart. From the observations of the U. S. Navy it has been located definitely **SE.** by **S.** $\frac{1}{2}$ **S.** from West Beacon and **SW.** $\frac{1}{4}$ **S.** from East Beacon, and about seven cables west from the shore of Long or Dolgoi Island. It has fifteen feet least water on it and is really out of the channel except for a vessel endeavoring to work in against a head wind.

Zenobia Rock.

TO AVOID ZENOBIA ROCK.

After passing Vitskari Rocks, the course is **NE.** $\frac{1}{2}$ **N.** until East Beacon bears **E NE.**, when Eastern Channel may be entered clear of the rock.

On the eastern side of the channel northward from Point Burunoff the islets form three principal groups, none of which have any special importance. The largest island is **Dolgoi** or **Long Island**, trending **NE.** $\frac{3}{4}$ **E.** and **SW.** $\frac{3}{4}$ **W.** and quite narrow. Behind **Mertz Islet**, on its northern shore, is a convenient little land-locked cove affording safe anchorage for boats in two fathoms. Two cables **NE.** from Long Island is Emgeten* Island, rather high, compact, and like all these islets pretty densely wooded.

Nearly four cables **N NW.** from Mertz Islet, with a clear passage between it and them, lie the two small Belknap Islets, immediately westward from which is a line of eight rocks or islets connected by reefs, called by Vasilieff The Eckholms,† just westward from which again is Liar Rock,‡ of small extent, the southeastern point of entrance to the Eastern Channel. On the middle Eckholm **East Beacon** has been erected by the U. S. Navy and is a pyramidal wooden structure like that on Makhnati Island, rising to seventy-two feet above the water.

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[1] **Dvoini-brateff** of Vasilieff. [2] **Rokhova** or **Rogova** of Vasilieff in 1809. [3] **Barani (Sheep) Island** of Vasilieff. [4] **Kayak** of Vasilieff, erroneously written **Kayalk**, **Kayatchi** and **Kayaktch**.

* Named by Vasilieff in 1809; referred to in later charts as **Engaylen**, **Emgayten**, **Emhelini**, etc.

† **Ek-galit-tch** by error on a chart issued by the Coast Survey in 1869.

‡ **Kamen Lgun** of Vasilieff, **False Rock** by mistranslation.

Northward nearly half a mile, from Emgeten Island lie the **Kutchuma**[1] group of islets, comprising in the order of their size Berry,[2] Error,[3] Boidarkin,[4] Luce, Fassett and Martin[5] islands or islets. There are several reefs among them, but no off-lying ones.

A couple of cables northward from Fassett Island is a projection of the main shore, narrow, bluff, steep-to, called **Silver Point**; immediately northeast from it is the small **Cobb Islet**, east from which is a small cove affording anchorage.

About a mile and a half northward from Silver Point is a projection of the Baranoff shore with several islands close to it. Westward the shore recedes to form a cove about half a mile in extent, named by the Navy Jamestown Bay, where a convenient watering place is found. The western head of the cove is marked by **Cannon (Pushki) Island** of Vasilieff; west of the eastern head are situated **Guertin, Ring, Dove** and **Minett** islets, and east from it, separated by the narrow **Ellsworth Cut**, lie **Harris** and **Marshall islets**, of small extent. Jamestown Bay affords shelter only for small craft behind the islands, being open to a southerly swell. It has five to fourteen fathoms in it.

Three-quarters of a mile **NE.** by **E.** from Harris Islets lies the entrance to **Silver Bay** or **Serebrennikoff Arm**,* which forms an extensive but narrow inlet. The headlands are not named. The northern and western one is situated in latitude 57° 10′ and two and a half miles **E.** by **N.** from the citadel at Sitka. The opposite or eastern headland is situated from the former **E SE.** a quarter of a mile. Both are bold, the depth of water in the entrance being over fifty fathoms. The inlet trends from the entrance in an **N NE.** direction less than a mile, whence it trends at nearly a right angle and to the **E SE.**, in which general direction it extends four miles, receiving several streams two of which enter the head of the arm. One which enters here from the south abounds in salmon and was formerly trapped at its mouth, where in the proper season the Russians had an establishment for the preparation of the fish for winter use. There are one or two small coves on the northern shore and an insignificant islet at the head of the arm. The mountains rise on either shore to a height not exceeding two thousand feet and are densely wooded. The width of the arm does not exceed three-quarters of a mile at any point, and it has not been sounded so far as known. Its chief importance is derived from the discovery of gold and silver bearing leads† in the mountains on the north at a short distance from the sea.

From the head of this arm the northeastern extreme of Deep Lake is distant only some three miles in a southeasterly direction.

From the **SE.** headland of Serebrennikoff Arm the entrance of **Niprohodni**‡ **Bay**, a small and very narrow inlet, bears **S.** half a mile. It was named by the Russians in 1809. This bay extends a mile and a quarter **NE.** by **E.** from the entrance, and is of a spectacle shape, consisting of two small basins connected by a boat passage. The entrance is choked by an islet; it has not been sounded and is of no value to navigation. Immediately southward adjacent to this bay is another narrow inlet called by the Russians **Kadiak Cove** or **Nachlezhnia**; this extends in a nearly due east direction from the entrance, about a mile and a quarter. It is nowhere over two cables wide. An islet obstructs the entrance leaving a narrow passage especially on the north; within are from five to fifteen fathoms over a muddy bottom. The Russians had a fish-packing station at the head, where some small streams come in.

SW. by **S.** two miles from the **SE.** headland of Serebrennikoff Arm a point is formed from which the shore trends to the eastward. This point forms the northern headland of **Aleutkina**§ **Bay**, and from it a mile **S.** ⅔ **E.** lies the opposite headland; neither is named. Off the mouth of this bay lie the Kutchuma Islets; within it, along its northern shore, are several others. The bay extends to the eastward about two miles, the eastern half being only two or three cables wide and curving to the northward. There is a clear passage along the southern shore with from seven to twenty-three fathoms reported. Two small streams come in from the eastward, where formerly were Russian fishing stations. This bay presents no advantages for navigation. Its southern headland also forms the northern headland of another bight called **Sandy**‖ **Cove**, which is formed immediately to the **S.** and **SE.** of the point above mentioned and is about half a mile in extent in either direction. It cannot be said to have any definite southern or western headland, as the coast trends for two miles **W SW.** to Cape Burunoff with only minor irregularities. The cove contains *several rocks*, one of which is submerged and about in the middle of the cove, half way from the northern shore to the islets on the other side, from which last the rock bears about **N.** ½ **E.** From the northeastern angle of this cove an opening one or two cables wide extends to the eastward, forming the entrance of **Deep**¶ **Inlet.**

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[1] **Kutchuma** of Vasilieff in 1809, also called **Boidarka** group; **Kutchiuma** of Tebienkoff. [2] **Yagodnoi (Berry) Island** of Vasilieff. [3] **Oshibki (Error) Islet** of Vasilieff, **Elgolm** and **Oshipki** on other charts. [4] Named by Vasilieff. [5] **Pesiak (Gravel) Islet** of Vasilieff.

* Named by Tebienkoff in 1850 after Rufus Serebrennikoff, erroneously written Serebrinikov, a Russian explorer of the Atna River; but is better known locally as Silver Bay.

† These metals undoubtedly exist in the rock taken out from some of the reported veins, but the want of capital to develop the mines has prevented hitherto the excavations necessary to form any just estimate of their value.

‡ **No Thoroughfare**; **Boroshki** or **Paroshki** of Tebienkoff in 1849.

§ Named by the Russian authorities in 1809; which is the **Leesia** or **Leesoffskaia** of Tebienkoff.

‖ Of Russian authorities of 1809, (Pestchania.)

¶ **Gloubokaia** of Russian authorities of 1809, and others, and **Dorokhova Bay** of Tebienkoff.

This bay extends with a gentle curve, of which the convexity is to the south, nearly four miles in a generally **E. ½ S.** direction, attaining a greatest width of half a mile at two miles east from the entrance, and averaging four cables in width throughout. In the entrance seventeen fathoms is the least water indicated by the original surveys, and at the head thirty. Throughout the greater portion no bottom has been found with fifty fathoms of line. There is a minute islet in the entrance near the southern shore.

In some tolerably recent maps a "canal passage" is marked connecting the head of this bay with an indentation of Chatham Strait. It was even proposed to use this "route" for extending the telegraph to Sitka. There is no evidence worthy of attention to indicate the existence of such a passage communicating with Sitka Sound, and in fact its non-existence is almost a certainty.

Two small runs come in at the head of Deep Inlet and there is a portage from their headwaters to the headwaters of a stream falling into Serebrennikoff Arm.

SW. by W. ¼ W. two and a half miles from the entrance of Deep Inlet lies **Cape Burunoff.***

The cape is broad, wooded, and not high, with several islets and many rocks in its vicinity, forming a patch extending a third of a mile **SW. by W. ½ W.** from the cape. Another patch of similar character is situated a short distance outside of the last, bearing from the cape **SW.** and extending three-quarters of a mile from it. The diameter of this patch is about a quarter of a mile **N NW.** and **S SE.**; it is constantly white with breakers, the cause which led to naming the cape as above.

Cape Burunoff is free from islets to the **NW.**, where ten fathoms may be carried to a cable's length of the shore. A mile due west from the cape is a *sunken rock* stated to have four fathoms on it.

A mile and a third **W. by S. ½ S.** from the cape lies **Kulichkoff Rock** or islet and reefs.†

Kulichkoff is a small compact mass, of rock a cable long **N.** and **S.** and steep-to. It is ten feet or more in height above high-water mark, and not "awash" as British Admiralty Chart No. 2337 declares. It is somewhat difficult to land upon, owing to the ocean swell and its steep sides. From its highest part the Rock **NW.** of Biorka bore **S. 0° 30′ E.**; the **S.** edge of St. Lazaria Island **S. 57¼° W.**; the northern edge **S. 59⅔° W.**; the south end of the principal Vitskari Rock **S. 67½° W.**; the station occupied on Vitskari by the Coast Survey party **S. 69½° W.**; the citadel at Sitka **N. 15⅔° E.**; and Mount Verstovaia **N. 25½° E.** According to Beardslee, West Beacon bears **N. 2° E.** from Kulichkoff Rock.

A cable and a half the northward (**N. 26⅓° W.**) of Kulichkoff lies a small patch of *rocks* awash. Between them and the islet is a passage with seven and a half to twelve fathoms of water over rocky bottom.‡

S SW. of Kulichkoff half a cable is said to be another similar rock, but nothing was seen of it though a considerable swell was rolling in from seaward.

These observations place Kulichkoff and its associated dangers two-thirds of a mile eastward from their position on British Admiralty Chart No. 2337, with relation to the points mentioned.

From Kulichkoff **SW. by W. ¾ W.** three miles lies the principal rock of the group, known as the **Vitskari§ Rocks**, which is an islet two cables in length.

This entire group is farther to the southward, and the individual patches are smaller and closer together than indicated by British Admiralty Chart No. 2337. The long reef stretching **NE. by E.** on that publication has no existence in fact, as was noticed in 1867 by the U. S. Coast Survey officers.

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* **Breakers**; of the early Russian and the U. S. Coast Survey charts, sometimes spelled **Bourounov**, &c., and re-named **Tolstoi** or **Broad Cape** by Tebienkoff,—this name, Tolstoi, being repeated by him in the vicinity of nearly every port in the Territory.

† These were named at an early day by Russian explorers, who used it in the above form in 1809; Tebienkoff calls it **Kulichek**; British Admiralty Chart No. 2337, **Kulich**; U. S. Hydrographic No. 225, **Koulitzkoff**, &c. The name means **Snipe Rock.**

In this connection it is necessary to call attention to a series of errors in connection with this and the Vitskari Rocks, and to the discrepancies of the charts. The British Admiralty Chart No. 2337, makes Sitka Sound narrower and longer than does Tebienkoff by about a mile each way, and agrees in this with the Russian Hydrographic Office Chart No. 1397, 1848. But nearly all the "additions" made to the Russian chart are errors of the most palpable character. The position of Kulichkoff and Vitskari, of the reefs about them, of their elevation and their extent, as well as that of the reef near Biorka, have been known for some time to be exceedingly erroneous. In 1874 this rock and Vitskari were visited by the U. S. Coast Survey and comparative observations made; but owing to the amount of work involved in correcting the leading-points of the whole sound the determinations were obliged to be dependent on the correct relative positions of the citadel at Sitka, the rock at the **NW.** angle of Biorka, and the Island of St. Lazaria. If the relative positions of these points in the Russian and British Hydrographic charts be correctly laid down, the positions here given for Vitskari and Kulichkoff will be also correct, and the distances will only be subject to any corrections of scale on the charts mentioned.

‡ The westernmost rock of Kulichkoff is stated by Beardslee to bear **S. 7° W.** from West Beacon, Makhnati Island. This would place it *relatively* about two-thirds of a mile east from its present position on any of the charts of Sitka Sound; but *absolutely*, having regard to the corrected longitude of Sitka, over half a mile west from its position on any chart; in which case Vitskari and all the western shores of the sound would have to be shifted about the same distance westward from their present positions, which, from other bearings, appears to be certainly the case. See U. S. Navy Department, Hydrographic Notice No. 5 of 1880, and Notice to Mariners, No. 81 of 1879.

§ This name has been applied to these rocks since the earliest Russian explorations in this vicinity, though in the English edition of Lisianski they are termed the **Middle Islands.**

The group consists of the principal Vitskari Rock and another directly northward from it, and separated only by half a cable's length. These are guarded for a cable and a half eastward from their bases by numerous rocks, though the water is bold-to. Two cables farther to the **N.** is a small patch awash, of which the knob of one rock is usually above water. **W SW.** from these half a mile are two or three dry rocks, and foul ground extending three-quarters of a mile from the patch awash. A circle described with a radius of six cables from the northern end of the big Vitskari from **NE.** by **N.** ½ **N.** around by **N.** to **W.** covers the entire area of dangers. This leaves a fairway of at least two and a half miles between Vitskari and Kulichkoff, for the use of navigators.

From the station on the highest part of the big Vitskari occupied by the U. S. Coast Survey party, the following bearings were obtained. The north end of Kulichkoff, **N.** 70° **E.**; Rock at **NW.** end of Biorka, **S.** 22½° **E.**; the southern edge of St. Lazaria Island, **S.** 50¼° **W.**; citadel at Sitka, **N.** 37° **E.**; Verstovaia Peak, **N.** 40° **E.** Midway between Vitskari and Kulichkoff the U. S. Coast Survey obtained sixty-six fathoms, muddy bottom.

The big Vitskari has been recommended by the U. S. Coast Survey as a site for a light-house.

In 1880 the U. S. Navy erected on Vitskari a conical stone beacon, twenty feet in diameter at the base and four feet in diameter at the top, from which projects a post five feet higher, capped by a large stone, which reaches forty-one feet above high water, and should be visible from the deck of an ordinary vessel on a clear day about eleven miles.

A Russian pilot informed Captain Beardslee that a *sunken rock* lies about two and a quarter miles **NE.** by **N.** from Vitskari, with two fathoms over it at lowest water. Repeated inquiries have failed to get any confirmatory evidence of the existence of this rock, which cannot be said to be established, other local navigators denying that there is any such rock.

Several *uncharted breakers* are also rumored to exist between Kulichkoff Rock and Obsechki Island and Cape Burunoff. These, if they exist, are out of the way of vessels, which have no legitimate business east from the line extending from Kulichkoff Rock to Vasilieff Bank or Shoal.

To the **S.** and **S SW.** of Cape Burunoff the shore is guarded by numerous rocks and islets of small extent; of these it does not appear important to refer to any except the most western, which border on the free water of the sound, the others from their situation having only a nominal relation to the interests of navigation at present.

Nearly **S SW.** about a mile and a half from Cape Burunoff lies **Obsechki Islet**, a small knob with twelve fathoms close to it from which the shore to the eastward is about a mile distant. From the islet in a generally **SE.** by **E.** direction an irregular line of rocks and islets extends for several miles. Two miles and an eighth **S SW.** from Burunoff a rocky patch is located by the early Russian charts, with doubt, under the name of the *Vasilieff* Bank.* A second position for it is also given, **SW.** ¼ **S.** half a mile from the preceding. Both are indicated as doubtful, and as comprising one dry and two submerged rocks. On all later charts the indications are accepted as substantiating the existence of *two* reefs, and the contents of the dotted danger line around them have been altered, apparently to suit the fancy of the draughtsman. It happens unfortunately that there is also a *Vasilieff Rock* or shoal (previously referred to) to the southward of Biorka. The position of the southwestern bank, if there be two, is the most westerly of any obstructions to navigation between Burunoff and Biorka, and from about this point the general trend of the group of islets under consideration is about **SE.** by **E.** ½ **E.** The outermost of these is **Kita** or **Whale Islet**, of small extent, but associated with a large number of smaller rocks, shoal patches and islets, the whole of which forms a barrier to navigation. The northern point of this barrier is situated half a mile **E SE.** from the western location for the *Vasilieff Bank*, and it extends thence in an easterly and southeasterly direction for two miles with a breadth **NE.** and **SW.**, which increases from half a mile at the **N NW.** end to a mile at the other extremity. This band of islets is composed of several lines or series of islets having a certain parallelism with each other and which are included between the navigable waters of the sound and a narrow but navigable passage leading to Redoubt Bay.

Vasilieff Bank.

From Cape Burunoff the shore is much indented, broken and guarded by rocks and islets for a distance of a mile and three-quarters **S.** ¾ **E.** to **Point Poverotnoi**† which is comparatively low and wooded. Hence to Obsechki Islet, a distance of a mile, is very much obstructed by numerous rocks and islets. These are mostly bold-to with deep water between them. They extend westward and southward from the end, and from the southern face of the point to three cables, and along its southern face nearly its whole extent. From the point the shore, curving gently to the northward, has a generally **E.** by **S.** ½ **S.** direction for five miles to **The Redoubt** or Dranishnikoff settlement. This was a fortified post erected by the Russians at a very early date, and is situated at some falls or rapids of the same name at the head of a narrow arm of the sea leading in from **Redoubt**‡ **Bay**, which comprises the waters included between the long stretch of main shore from Poverotnoi Point to the Redoubt on the north and east, the islets which trend away to the **SE.** from the Vasilieff banks, and a spur of the

* Vasilevka of the British Admiralty Chart No. 2337.

† **Turnabout**; named by the Russians in 1809.

‡ Named by Tebienkoff; called **Toyon's Bay** by Lisianski, and more lately **Oseraki (Lake) Bay.**

main shore which puts out in a northwesterly direction. The entrance of this bay has been before alluded to as existing between the rocks to the southward of Poverotnoi and the islets opposite. It is not over two cables wide, with a greatest depth recorded of about ten fathoms over rocky bottom; at a distance of less than a mile from Poverotnoi it widens owing to the cessation of the innermost barrier of islets, and to the south and east forms a basin a mile and a half in diameter. This might be reached from the **S SW.**, but numerous sunken rocks would render the attempt risky. At a distance of two and three-quarters miles **E SE.** from Poverotnoi Point the bay contracts to two-thirds of a mile in width **N NE.** and **S SW.** between the main shore and the spur before referred to. This contracted portion continues in an **E SE.** direction about one mile when the bay divides into two arms, one on either side of a bluff point. Thus is formed on the south a very narrow and contracted inlet about a mile in length extending to the **SE.** by **E.** and of no value for navigation; and, on the other, north side, a passage containing deep water and about a quarter of a mile in width, extending a mile and a quarter to the Redoubt Rapids in an **E.** by **S.** $\frac{2}{3}$ **S.** direction. This latter passage is locally known as Oserski, meaning Lake Bay. At its southeastern termination it has a width of a thousand feet and a depth of not less than twenty-five fathoms. The shores are rocky and broken, rising on the northern side to fifteen hundred feet and timbered to the water. Along the southern shores are a few islets of very small extent. Navigation is closed at the head of this arm by a barrier of rock extending across the passage, and which has been cut through by the outflow from Deep Lake in such a way as to form two islands. There is a fall from the lake-level of about nine feet to the waters of the bay through the channels between the islands, where the water rushing out among numerous rocks forms the "Rapids." The least width from shore to shore near the falls is about two hundred feet; the width of the channels between the islands is less than one hundred feet. On the northern shore and island the Russian American Company erected an establishment called **The Redoubt** on the site of the old Dranishnikoff settlement, and which is also known as the Oserski or Lake Redoubt. It was simply but securely fortified by a stockade and other defenses from any attack of the natives. The object of this establishment was the procuring of fish for the colony at Sitka for consumption both in a fresh and salted state, in which condition they were also distributed to other posts of the company where fish were less abundant. To obtain the fish a series of weirs was constructed across the outlet in a very solid and substantial manner; in 1868 these were in good order, but in 1880 had fallen into decay. The establishment comprised twelve or fourteen buildings, besides a chapel within the stockade, and a wharf. A reconnaissance of the vicinity of the Redoubt was made by the U. S. Coast Survey in 1867.

From Redoubt Bay the salmon in spawning season are in the habit of ascending the Rapids to deposit their spawn in Deep Lake,* a remarkable body of fresh water occupying a gorge eight miles in length **NE.** by **N.** $\frac{1}{2}$ **N.** and **SW.** by **S.** $\frac{1}{2}$ **S.** and not exceeding three-quarters of a mile in width at its widest part. It is more than fifty fathoms deep throughout the greater part of its extent, according to Russian authorities. The shores are remarkably compact, there being but one or two coves, which are situated near the southwest end† of the lake. The land about the lake, except at its **NE.** and **SW.** extremes, is high, broken, abrupt and densely wooded. The mountains, which extend from the outlet along the shore **NE.** from Redoubt Bay, were known to the Russians as the **Dranishnikoff Peak** and mountains. At the **NE.** extreme of Deep Lake a considerable stream comes in "one hundred and forty feet wide and which can be ascended for over three miles. The upper portion, shoal and full of rapids, is not accessible, from the density of the shrubbery, trees and thorny bushes." The lower portion has a current of four knots. It is, doubtless, this stream which has given rise to the story of canoe communication between the sound and Chatham Strait, south of Sitka.

From Kita Islet **E.** by **S.** $\frac{1}{3}$ **S.** an almost unbroken barrier of islets extends, cutting off the waters of Redoubt Bay from those of Sitka Sound. There are numerous passages between these islets,‡ but they do not appear to have been thoroughly explored or even partially sounded. The barrier terminates to the **SE.** in the mouth of Kanga Bay, which extends in a generally **E SE.** direction for about two miles, its head reaching within a third of a mile of one of the coves of Deep Lake. This bay is about a third of a mile wide toward its head and gradually widens to a mile and a quarter at its mouth which is obstructed by islets and rocks. The bay does not appear to have been surveyed, and offers no advantages for navigation. A mountain directly to the **S SE.** from the upper part of the bay is called **Kliucheff** or **Springs Mountain.** The southern headland of this bay bears **E SE.** three miles from Kita Islet. From this headland the coast has a general trend of **SE.** by **S.** two miles and a half to **Hot Springs Bay,** though in this direction there are many unimportant irregularities, including four or five coves or bays of small extent, and numberless rocks and islets along the shore. A single small bare rock, a third of a mile **SW.** by **W.** from the north end of Peisar Islet, lies **S.** $\frac{1}{2}$ **E.** from Poverotnoi Point three miles and half. A line drawn from the western Vasilieff Bank to this rock nearly **SE.** by **S.** $\frac{1}{4}$ **S.** three and a third miles marks the limit of advisable navigation to the **NE.** in this vicinity except for small craft.

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* **Glubokoi**; also called by Tebienkoff **Redoubt Lake.**

† To which, on some charts, the name of **Kliucheff** or **Springs Bay** has been erroneously transferred.

‡ The largest of these are known as **Koka, Ilpit** or **Ilput** and **Kanga** islets, all apparently native names.

Four cables E. from this rock is **Peisar Islet**, somewhat less than a mile long NW. by W. and SE. by E. and two cables wide, wooded, low, and surrounded by rocks. Half a mile E SE. from the SE. end of Peisar is a high bare rock or pillar, called **Viesokoi or High Rock Islet.** Between this and Peisar are thirty fathoms. From Viesokoi Rock the northeastern point of Biorka bears SW. ½ W. two and a half miles.

The general description of the shores and islands of Sitka Sound being thus completed, as far as is compatible with the known uncertainties and deficiencies of observation and charts, it remains to refer to the general hydrographic characteristics of Sitka Sound as a whole, to Sitka, its chief port at present, and to give brief sailing directions for its navigation.

HYDROGRAPHIC CHARACTERISTICS OF SITKA SOUND.

The tides in this vicinity, as usual throughout this region, flood to the northward and westward when not diverted by the conformation of the land. During flood the current sets strongly upon the reefs and shoals in the vicinity of Cape Edgecumbe, and hence navigators should avoid approaching this headland within at least two miles, as in case of a calm a vessel would be in danger of being cast upon the rocks.

The NW. extreme of Biorka should not be approached from the westward in entering the sound within two and three-quarter miles until it bears due east, and conversely in leaving the sound, in order that the *sunken rock* in that vicinity may be avoided.

In entering the sound with a NW. wind the navigator should keep well to the southward, especially before noon. Until the middle of the day, in most cases, Mt. Edgecumbe cuts off all winds from the N. and NW. from an area of the sound extending a mile or two SE. from St. Lazaria Island. Later in the day, according to Tebienkoff, this is not the case. The same authority states that in entering the sound with the wind in the southern quadrants of the compass it will usually veer to the E. or E NE. as the navigator approaches the land. The inconveniences arising from this cause are best provided against by keeping well to the eastward after the headlands are passed.

In spring and summer, when easterly winds prevail outside, they are almost always found to blow NW. inside the sound. The usual passage between Kulichkoff and Vitskari is preferable to the others.

Having entered the bay with southern winds which have veered to SE. and risen to a gale, Tebienkoff strongly advises the navigator to remain within the bay, since numerous vessels have been lost while endeavoring to put to sea by being driven by the combined force of wind and tidal current on the reefs about Cape Edgecumbe. Under these circumstances Symonds Bay on Biorka Island may afford a place of retreat until the storm is spent.

The sound is favorably situated for navigation by its opening to the westward. The westerly winds afford the approaching navigator a view of the land by clearing away the fog and assist him to the anchorage, while the SE. winds, which bring rain and fog, place no obstacle in the way of his standing off-shore.

When at the anchorage at Sitka, if the wind blows E NE. and no breakers are visible on Vitskari and Kulichkoff reefs, Tebienkoff states that the wind outside will be found to proceed from SE. or NE., but probably the latter. On the other hand, if the surf be visible on these reefs when the wind at the anchorage is E NE., the wind outside and within the sound, as far easterly as Vitskari, will be found to proceed from the S. or W., and it is not advisable for a sailing vessel to attempt to put to sea.

The sound itself presents no difficulties in the way of navigation up to the barrier of islets which forms the protection of the anchorages of Sitka. Avoiding the rocks already mentioned in the vicinity of the headlands of the sound and proceeding through the commodious passage between Vitskari and Kulichkoff at a convenient distance from the islets, a local pilot should be taken before attempting to enter the harbor. For large vessels this is imperative, and is advisable for any stranger, though fore-and-aft-rigged vessels drawing less than twelve feet may be taken in through the Middle or Eastern Passage with little risk, provided the navigator be sure of his position, is provided with the latest harbor-chart (1881-'82), and exercises due caution. The winds are seldom fair for entering by the western channel, which is rarely used except by steam vessels.

The following sailing directions are chiefly based on Russian Hydrographic Office Chart No. 1397, 1848; British Admiralty Chart No. 2337, edition of 1882 (errors excepted); U.S. Coast Survey Harbor Chart No. 708, 1881; British Admiralty Chart No. 2348, a copy in nearly all respects of 708; and some unpublished data.

SAILING DIRECTIONS

FOR SITKA SOUND.

Dangers.—*Biorka Rock*, submerged ten feet, less than two miles and a half W. from NW. point of Biorka Island. *Vasilieff Bank*. *Kulichkoff* and *Vitskari* rocks. *Two-fathom patch*, NE. by N. ½ N. two and a quarter miles from Vitskari. *Zenobia Rock*.

Directions.—Avoid approaching Biorka nearer than two and a half miles. From a point three miles **W.** from the **NW.** extreme of Biorka the course is **N.** ½ **E.** until up with Vitskari Beacon, abeam half a mile westward. [The long reef extending **NE.** from Vitskari, on British Admiralty Chart No. 2337, does not exist.] Thence the course is for West Beacon, Makhnati Island, if bound for the Western or Middle channels, or for East Beacon, on the Eckholms, if bound for the Eastern Channel.

Western Channel Dangers.—Sunken rocks seaward from Sentinel Rock and Makhnati Island. Shoal westward from Sasednı Island. *Channel Rock*, in the western entrance, and *Harbor Rock*, near the anchorage.

Directions.—From a point where West Beacon on Makhnati Island bears **NE.** by **N.** one mile, the course in will be due **N.** until the north tangent of Japonski Island comes out north from Battery Island and bears **E.** ⅜ **N.** When on this course the citadel or governor's house at Sitka bears **E.** ¾ **S.**, come to on the port tack and anchor in six fathoms.

Without local knowledge or a pilot the navigator should not attempt to reach the pier at Sitka from this anchorage in a vessel drawing over nine feet of water. The Western Channel is clear and wide, but little used, since in it the wind usually fails to blow home. The western anchorage cannot be recommended, as the holding-ground is a thin crust over shaly bottom, which gives way readily, and the vessel is liable to drag. It is seldom used except for temporary purposes, or unless a vessel can moor to the adjacent shores. Mooring buoys formerly existed here, but have long been removed.

Middle Channel Dangers.—Shoal west from Passage Islands; *Keene Rocks; Volga Island Shoal; Rose* and *Mitchell rocks.*

Directions.—The Middle Channel may be entered between Makhnati Island and Surf Rocks, which is generally the most convenient with prevailing winds, and was used exclusively by the Russians, but open to the objection that Keene Rocks lie almost directly in the fairway. With smooth water and a vessel drawing less than eleven feet, Keene Rocks offer no obstacle even at low water, and at high water there is not less than twenty-two feet over them.

Another entrance is between Surf Rocks and the Passage Islands, but it is narrowed to nearly half its apparent width by a *ten-foot shoal* extending northwestward from the Passage Islands, wrongly marked two and three-quarters fathoms on the 1882 edition of British Admiralty Chart No. 2348.

The entrance recommended by the U. S. Navy lies between the Passage Islands and Kayak Islets, and is clear of dangers until up with Mitchell Rocks.

I. From a point when West Beacon, Makhnati Island, bears **N.** by **W.** four cables and Surf Rocks **E NE.**, the course is **NE.** for Volga Island, which should be rounded a cable southward from it until Surf Rocks bear **SW.** ¾ **S.** astern, when the course will be **NE.** ¾ **N.** to the anchorage clear of all dangers, when the navigator may select his berth, preferably out of range of the passage by which he entered, since through this from the sound an uneasy swell is usually propagated. Anchorage may be had in from six to thirteen fathoms over a bottom of mud, stones and broken shell, affording excellent holding-ground.

II. Between Surf Rocks and Passage Islands the navigator should enter two-thirds of the way toward Surf Rocks from the islands, and the course will be **NE.** by **N.** ¾ **N.** for Volga Island until Surf Rocks bear astern **SW.** ¾ **S.**, when the course will be **NE.** ¾ **N.** for the anchorage, as before.

III. Between the Passage Islands and Kayak Islets the course from mid-channel will be due north for the citadel or governor's house at Sitka, which may be seen elevated over all other buildings in the town, until Surf Rock bears **SW.** ¾ **S.** astern, when the course will be **NE.** ¾ **N.** for the anchorage, as before.

Eastern Channel Dangers.—*Zenobia, Simpson* and *Tsaritza* rocks.

Directions.—By keeping East Beacon on the Eckholms bearing nothing to northward of **NE.** ½ **E.**, Zenobia Rock outside the entrance is avoided. A course **NE.** ½ **E.** laid to pass Liar Rock at a distance of two and a half cables until Katz Island opens clear east from Galankin Island, thence due north, rounding the Twins at a distance of two cables, then **W.** by **N.** for the citadel or governor's house, selecting a convenient berth at discretion, probably in fourteen fathoms due north a cable and a half from Kutkan Island.

In the vicinity of Indian or Kaloshian River *shoals* extend off-shore two cables, which should be avoided.

The governor's house, citadel, or "castle," at Sitka is elevated on a rock above the rest of the town; its roof was of a red color and the walls painted with yellow ochre. The position and elevation is sufficient to identify it.

A cupola 110 feet above the sea contains the remains of a lantern formerly used as a guiding light for vessels, but now dismantled; during the day, while troops were stationed here, the garrison flag was usually displayed from a staff on the house or close to it.

The eastern anchorage is in all respects preferable to the western except for small craft. Directly abreast the Middle Passage the berth is uneasy in southwest weather, but the holding-ground is excellent and there is plenty of room to swing. In the western anchorage, except at a distance of a mile from the town, a vessel must be moored, and the holding-ground is not so good.

Capt. Meade, U. S. N., after considerable experience, recommends mooring "with an anchor and forty-five fathoms cable laid at **NE.**, and the port anchor and thirty fathoms laid out west and put on the swivel." "Or, a vessel may moor with port anchor **NE.**, starboard **SE.**, and a kedge astern to westward." "The only really violent winds come from **NE.** to **E.**, clearing off with squalls from the westward."

From the conformation of the land all easterly winds draw through Serebrennikoff Arm and strike the anchorage with magnified force, in squalls rather than as a steady gale. With a sufficiency of ground tackle and chain cable of strength such as all prudent navigation in Alaskan waters demands, the master of a vessel need feel no apprehension in the eastern anchorage of Sitka.

Sitka.

The settlement of New Archangel,* now known as **Sitka** from the native name for the locality, was founded by Baranoff, in October, 1804, after the destruction by the natives of the earlier settlement founded in 1800 on Starri-Gavan Bay. It was made shortly afterward the site of the Colonial Direction of the Russian-American Company, a relation which it retained during the remainder of the Russian occupancy.

Since the transfer it has undergone a great change, and is at present of little commercial importance except from the presence of the chief customs office for the Alaska district.

Its importance in the present connection arises from the fact that physical observations were maintained by the Russian authorities from 1832 until the time of the transfer of the territory; and also because Sitka is one of the few points in the territory which have had a point astronomically determined by instruments of precision with sufficient exactitude to be available for rating chronometers.†

The latest determination of the geographical position of the astronomical station on the parade ground at Sitka by the U. S. Coast Survey is as follows:

Latitude	**57° 02′ 51″.8 N.**
Longitude (in arc)	**135° 19′ 45″.0 W.**
Longitude (in time)	**9^h 01^m 19^s.0 ± 1^s.1 W.**

The variation of the compass was determined by the U. S. Coast Survey to be **29° 04′.8** easterly in May, 1880. The positions used as astronomical and magnetic observing stations by the U. S. Coast Survey parties in 1874 are as follows:

Astronomical Station.—On the parade ground in front of the block of cottages‡ used as officers' quarters, twenty-six meters (85 feet) from the southeast and twenty-nine and a third meters (96 feet) from the southwest corner of said block, fences not taken into account.

Magnetic Station.—Eighteen and three-tenths meters (60 feet) westward from the astronomical station, twenty-three meters (75 feet) from the **SW.** corner of the officers' quarters, and thirty-two and two-tenths meters (106 feet) from the **NE.** corner of the quartermaster's storehouse. From this position the spire of the Indian chapel bore north **0° 33′** west—true. A copper station mark, placed in the rock to the westward of the officers' quarters by the U. S. Coast Survey party of 1867, appears to have been stolen by the natives; at all events it has disappeared. For the position of the observation spot on Japonski Island in 1880, see page 141.

Tides.

The tides of Sitka are compound and very unequal in height and range—consisting in general of two high and two low waters per diem. They bear a marked similarity—as might be expected—to the type of tides which, with but few exceptions, is known to prevail from San Francisco northward where-

* The name of New Archangel arises, not from any connection with Archangel in Russia, but because the early settlement at Starri-Gavan Bay was dedicated to the Archangel Gabriel. Being destroyed by the natives and its garrison massacred, the new settlement was placed on the present site of Sitka, the elevated rock offering great facilities for defense. The original archangel having failed to protect his colony, the new settlement was dedicated to the Archangel Michael and received from Lisianski the name of New Archangel on that account.

† The meteorological and magnetic observations at this locality will be found discussed in Appendix I, 1879, and also in the present appendix.

‡ Since destroyed by fire, but the site can be identified.

ever observations have been sufficiently full to determine the form of the tidal wave. They differ from those of the Bering Sea in the more pronounced character of the smaller low water, which is rarely entirely obscured at Sitka, and in the smaller volume of the solar as compared with the total tide.

The characters of this tide are as follows, the plane of reference or mean of the *low* low waters being taken as 0.00 feet:

Sitka Tides.

	Feet.
Average height of high waters	8.93
Average *high* high waters	9.70
Average of all low waters	1.38
Mean level of the sea	5.16
Highest water observed	12.38
Lowest water observed (below plane of reference)	−3.05
Greatest diurnal range	14.41
Mean diurnal range	7.55

To obtain the Height and Time of Tides.

From the following table an approximate prediction of height and time can be made, the two tides of the same day being usually unequal in proportion to the moon's declination.

Take from the Nautical Almanac the time of the moon's upper meridian passage at Greenwich or Washington, to this add the longitude of Sitka in *time*, *plus* the amount entered in the table, to the right of the prevailing declination, in the column headed *Interval*. If Washington transits are used, to this sum must also be added $0^h\ 6^m$, which will give the time of high or low water. The *height* is to be found just to the right of the *interval* in the table.

If the lower meridian transit be required, its time will be half the difference between the two adjacent upper transits as given in the almanac. When a minus (—) sign precedes a quantity in the tables, that quantity should be subtracted instead of added.

TABLE I.

Moon's Declination.	Upper Meridian Transit.				Lower Meridian Transit.			
	High Water.		Low Water.		High Water.		Low Water.	
	Interval.	Height.	Interval.	Height.	Interval.	Height.	Interval.	Height.
	h. m.	ft. in.	h. m.	ft. in.	h. m.	ft. in.	h. m.	ft. in.
Zero going North	12 42	9 11	18 54	1 2	12 42	8 7	18 42	0 8
Mid North increasing	12 12	10 2	19 06	0 2	13 06	7 11	18 30	2 10
Greatest North	12 12	10 0	19 12	−0 4	13 18	8 0	18 30	3 11
Mid North decreasing	12 24	9 5	19 00	−0 2	13 12	8 10	18 42	3 0
Zero going South	12 42	8 7	18 42	0 8	12 42	9 11	18 54	1 2
Mid South increasing	13 06	7 11	18 30	2 10	12 12	10 2	19 06	0 2
Greatest South	13 18	8 0	18 30	3 11	12 12	10 0	19 12	−0 4
Mid South decreasing	13 12	8 10	18 42	3 00	12 24	9 5	19 00	−0 2

CORRECTION FOR PHASE.

To the times and heights as obtained from the preceding table a correction for the moon's quarterings or phases must be applied from the following table. This correction is the same for an upper or lower transit.

TABLE II.

Moon's Phases.	High Water.		Low Water.	
	h. m.	ft. in.	h. m.	ft. in.
New moon	+0 12	+1 1	+0 12	−1 1
1st octant	−0 36	+0 4	−0 36	−0 6
1st quarter	−0 12	−1 1	−0 12	+1 1
3d octant	+0 36	−0 4	+0 36	+0 6
Full moon	+0 12	+1 1	+0 12	−1 1
5th octant	−0 36	+0 4	−0 36	−0 6
3d quarter	−0 12	−1 1	−0 12	+1 1
7th octant	+0 36	−0 4	+0 36	+0 6

There is no "establishment," as in regions where the tides are not complex. The "establishment" to be found on the British Admiralty and other charts is merely an approximation, more or less rough in all cases, and in most quite unreliable except for the particular part of the lunar year in which the observations were taken from which it was computed.

PASSAGES BETWEEN SITKA SOUND AND SALISBURY SOUND.

Sitka Sound is connected with the waters north of Kruzoff Island by a series of passages discovered by Hayward of Portlock's party, in 1787, part of which were named by Portlock on his chart **Hayward Straits.***

These straits communicate with Sitka Sound by an opening on either side of Krestoff Island. The northeastern opening and its approaches lie between Kamenoi and Kresta points. Beginning with the former, immediately to the northward and northwestward from Kresta Point, lies **Promisla Bay.**†

This bay is of small extent, being a nearly equilateral triangle whose eastern side or entrance is two-thirds of a mile wide and contains a wooded islet of small extent, from which *a shoal* extends a short distance to the eastward. **E NE.** from this islet a quarter of a mile is a *sunken rock*, according to several authorities, and half a mile eastward from the islet is a rock ten feet above water, noted by the Coast Survey in 1867. This is probably a continuation of the other reef.‡

The islet may be passed on either hand. Within the bay twenty to twenty-five fathoms water prevail with hard bottom. In a southeaster a heavy swell rolls into this bay. From the head of the bay the shores of Krestoff Island trend **NE.** by **N.** two and a quarter miles to its **Eastern Point**, which forms the **SW.** headland of Olga Strait. Apparently it is low, with rocky shores.§

From Eastern Point, between E. and **S.** ½ **W.**, to the distance of a mile and a quarter, extends the the cluster known as the **Siginaka Islands.**‖

These comprise six principal islets, all of which, though of small extent, have received names.¶ In the passages about and between them are numerous rocks above or below the surface. The islets are not high, but rocky and wooded. They considerably obstruct the approaches to Olga Strait, but a clear passage nearly four cables wide is left between the islands and the Lisianski Peninsula. This passage is very deep, no bottom being obtainable with fifty or sixty fathoms of line. The rising tide here sets northward.

A mile **E.** ½ **N.** from Eastern Point is a small spur of the Lisianski Peninsula called **Dog**** **Point** by the Russian authorities, to the north from and behind which is a snug little boat cove into which four fathoms may be carried. From a ravine at its head a stream flows into this cove. From Dog Point the shore follows a generally **SE.** by **E.** ½ **E.** direction for a mile and a quarter, rounding to Lisianski Point. Dog Point and Eastern Point may be regarded as the headlands of the southeastern entrance to the straits. Due north from Eastern Point about one mile lies the southern point of Halleck island, which forms the western extreme of the southern termination of **Nakwasina**†† **Passage.**

This passage is of considerable extent and not yet fully investigated; with Olga Strait it completely encircles a large tract of land named **Halleck**‡‡ **Island.** This island is about five and a half miles long in a **NW.** by **N.** ½ **N.** and **SE.** by **S.** ½ **S.** direction, and somewhat less than five miles in greatest breadth. It is of rounded triangular shape, moderately high, and with an irregular and wooded surface.

Its southern point, called on Russian maps **Point**§§ **Krugloi,** is separated at high water by a boat passage half a cable wide from **Beehive Island,** round, high, and situated a little northward from Point Krugloi, so that between it, the point and the bar which extends northwesterly to Halleck Island, a cove,

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* This name, somewhat widely adopted at that period, has fallen into neglect; other names have been applied to the several channels, and there does not appear to be any general term in present use to indicate the whole of the waters which separate Kruzoff from Baranoff Island. The names **Olga, Neva** and **Krestoff** are applied differently on different charts, so much so that grave confusion has been the result. Here the local designations now in common use will be adopted without special regard to priority of application, since apparently in this way only can still worse confusion be avoided.

† **Providence Bay** of Russian authorities since 1848.

‡ There are discrepancies among authorities in regard to the islets in and near this bay which cannot be reconciled. **Tebienkoff** indicates four islets and a sunken rock. There seems to be not less than two above water.

§ The portion of the archipelago about to be described is so imperfectly known and mapped that all distances and directions must be taken as approximate only. In many cases the charts are known to be insufficient. Reference will be had for the most part to the Russian Hydrographic Chart No. 1397 (10 B), 1848, which appears to be by far the most reliable of the charts of this region, with corrections by officers of the U. S. Navy and the U. S. Coast and Geodetic Survey.

‖ From the largest islet, so named by Vasilieff in 1809.

¶ These are, beginning at north and going round by east. **Koloshenkin, Nakwasinskoi, Kushti, Vledrin, Siginak** and **Kliarkoff** (**Clark**) islands, besides several smaller ones. They were named by Vasilieff in 1809.

** **Sabachi.**

†† Or **Nakwasinskaia** of Russian authorities of 1809; sometimes rendered **Noquashinski** and also **Little Noquashinski Bay** by various authorities.

‡‡ **By Meade in 1869.**

§§ Or **Round Point.**

is formed in which, however, no soundings have been taken. About east from Point Krugloi, on the main shore, is a snug cove into which a stream falls. The distance seems not less than a mile, more than any of the charts allow, of which about half is obstructed by islands. A short distance eastward from Beehive Island is **Poperechnoi** (**Crosswise**) **Islet**, which appears at high water (and may at low water prove to be) composed of two adjacent islands, high, wooded and about equal in size, the eastern end of the southeastern island lapping south from the western end of the other and divided from it only by an extremely narrow passage. From the easternmost extreme of the latter to the shore at the cove above mentioned appeared to the eye not less than half a mile, clear and free of obstructions.

From hence Nakwasina Passage extends in a generally northerly direction about six miles with a width of about a mile. Numerous streams fall into the passage and there are several coves on the eastern shore. Off one of these, leading toward Katliana Bay, are two small wooded islets and some bare rocks. Some of these coves appear likely to afford anchorage. The shore of Halleck Island appears even and compact throughout, and the land rises rapidly to a considerable height. At the **NE.** extreme of Halleck Island, opposite, a low ⊣-shaped point makes out with small coves **NW.** and **SE.**, a small islet off it, and *a sunken rock* **NW.** from its **NW.** extreme. This shore must not be approached closely or without great caution. Hence, this passage extends with an evenly rounded curve to the northward, southwest and finally southward for six miles in total distance, finally joining Olga Strait at its northern termination. This portion of the passage is somewhat irregular in width, but averages considerably less than the part **E.** of Halleck Island. It is evident that no special use can be made of this passage for navigation at present. "Inexhaustible" beds of pure white crystalline marble are reported here, and silver and iron are stated to exist by Doroschin. These may at some future time give rise to commercial investigation of the inlet. The outcrop of marble is **NW.** from Halleck Island on the main shore, and has not been worked. It is exposed for more than one hundred feet in width and is covered apparently much farther by vegetation, with deep water close to the shore.

As Point Krugloi forms the northern, so Eastern Point forms the southern extreme of the south entrance of **Olga*** **Strait.** This strait separates Krestoff and Halleck islands and forms a part of what was named **Neva Channel** by Lisianski in 1805. This strait extends four and a half miles in a **NW.** by **W.** ½ **W.** general direction from its southern entrance, with a general width of about half a mile and not less than four cables wide at its narrowest point (according to Russian Hydrographic Chart No. 1397). The shores on either hand are compact, the water is bold, and no obstructions or hidden dangers are reported. Just within, westward from Krugloi Point, a fine permanent cascade comes in from the high land of Halleck Island, where it is said to be fed by a lake in the mountains. At a distance of three and a quarter miles from the southern entrance Russian authorities indicate† the locality where the tide of Sitka Sound passing from the south meets that which proceeds from the north and produces at times whirls, rips and choppy cross sea, incommodious for small craft. Two and three-quarters miles northwestward from the southern entrance is the least water found in mid-channel, somewhat over four and a half fathoms. Thence it deepens **NW.** and **SE.** toward the entrances, reaching about thirty fathoms in each entrance. The bottom is rocky, shelly or gravelly. No directions appear to be required for its safe navigation.‡

The northwesternmost point of Krestoff Island, forming the northwestern extreme of Olga Strait, is **Point Olga,** from which the angle of Halleck Island, which separates the northern entrance of Nakwasina Passage from Olga Strait, bears **N.** by **E.** half a mile, while **Neva Point,** the **SE.** extreme of Neva Passage, bears **W.** about the same distance.

Krestoff Island,§ of which Point Olga is the most northerly portion, extends thence **SE.** ½ **S.** five and three-quarters miles, with a greatest width of about three miles near its southern termination. It has a somewhat triangular form the shorter side or base fronting on part of Sitka Sound, and the island, like a wedge, separating the waters of Olga and Krestoff straits. It is mountainous and densely wooded. Between its southern extreme, Kresta Point, and Kamenoi Point on Kruzoff Island, an arm of Sitka Sound projects in a **NW.** by **W.** direction for a distance of a mile and a third. This arm gradually narrows to the northwestward until it terminates between two headlands which are separated by a strait less than half a mile wide. Up to this point the shores on either side are infested with rocks, which, however, do not extend to a great distance from the shore and are mostly visible. The depth of water in this arm is considerable, and up to the two heads of the strait there is no desirable

*Named by Vasilieff, jr., in 1833. It is the **Krestoff Strait** of the Russian Hydrographic Charts of 1809 and 1853, and the **Olga Strait** of that of 1848. It is usually known by those navigating in this region, as well as to the local inhabitants, by the name of Olga Strait, though it is not the Olga Strait of Tebienkoff. On account of this confusion, probably, no name is assigned to it on the Admiralty Charts The name, which is here retained, though not the prior name, is adopted on the ground of local usage and its presence on the best modern chart of the locality.

†This note has been translated for English cartographers, who indicate it by the mysterious phrase "Disputed boundary."

‡Russian Hydrographic Chart No. 1397, 1848, for these straits as well as Sitka and Salisbury sounds is the most reliable and accurate yet assigned, but sundry corrections appear on the U. S. Hydrographic Chart No. 225 from observations by U. S. Naval officers.

§Cross Island.

anchorage. These headlands have not been named on the charts, and the discrepancies between different charts of this vicinity are very marked. This strait, not being at present important for navigation, has been less carefully examined and is consequently less known than Olga Strait.

Krestoff Strait* extends four and a half miles in a **NW.** ½ **N.** and **SE.** ½ **S.** direction and with an average width of two and a quarter miles, though the southern entrance is very contracted and much obstructed. The main portion of the strait carries twenty to fifty fathoms water, and is abundantly sprinkled with rocks, islets and similar obstructions, which are nearly all visible above water.

Immediately opposite the entrance and barring progress to the northward is an island, which on most Russian charts is named **Magoun† Island.** According to Tebienkoff it is about three-quarters of a mile long and half a mile broad. Associated with and chiefly west and southwest from this island are a large number of smaller islets, surrounded and connected with Magoun Island and with each other by shoal water and foul ground. A narrow passage, according to the charts, affording nowhere more than two and a half cables clear way and in some places less than one cable, is all that separates the Magoun Group from the shores of Krestoff and Kruzoff islands. Since the clear and navigable Olga Strait is more conveniently situated for commerce, it cannot be expected that this tortuous channel offers any special inducements for navigation. There are several anchorages hereabouts, of which the Russians formerly availed themselves when the settlement was at Starri-Gavan Bay. In the most commodious of these places, however, it would seem (according to Lisianski's experience) to be necessary to moor head and stern. The two headlands bear nearly due **N.** and **S.** from each other about three cables apart, with not over two and a half cables clear channel between them. Here, in mid-channel, twenty-six to thirty fathoms may be had. There is *a sunken rock*, not on the chart, immediately northward from the entrance, on the Krestoff side. Keep the western shore close aboard here. Immediately within the headlands **E.** and **S.** from the Magoun Group is **Krestoff‡** or **Cross Harbor.**

It consists of the waters of Krestoff Strait which lie between the Magoun Group and the adjacent shores **S.** and **E.** from the group. These waters form two passages around the islands, but the details differ so much in different charts that it is not safe to offer more than a general description.

Directly opposite the middle of the entrance an anchorage is indicated by Tebienkoff in twelve or fifteen fathoms. It is very contracted, bounded by the southeastern point of Magoun Island on the eastern hand, and by *a reef* or extension of the Magoun Shoals to the west and south. It is barely over a cable in extent. Northwest a cable and a half from the southern headlands Lisianski anchored, but was obliged to moor from the want of room to swing in safety. **SW.** by **W.** about six cables from this locality Tebienkoff indicates another anchorage in six or seven fathoms. The passage here turns abruptly **N NW.**, forming a well-protected basin at the turn about half a mile in diameter. This was called **Mielkoi (Shoal) Bay** by the Russians in 1809. So much of it is obstructed by shoals that only a portion, about two and a half cables in extent, is available for shipping. The spot for anchoring would appear to be that in which, when advancing in mid-channel from either direction, both channels are kept open to their fullest extent. From this anchorage northward the passage is less than a cable in width but carries six fathoms through, which rapidly deepens after passing the Narrows.

The passage which leads to the northward between Magoun and Krestoff islands is even less commodious. The water is much deeper, ranging from sixteen to thirty-five fathoms, and at a quarter of a mile from the entrance there is *a sunken rock* directly in mid-channel. The passage is east from it. This passage continues hence about four cables in the same general direction, narrowing to a cable and a half in this space, when it divides,—one part extending **W NW.** past the islands and rapidly widening and joining the main body of the strait. The other portion is contined in a northerly direction through a very narrow defile or gorge of Krestoff Island for half a mile, where it widens into a very singular, narrow, oblong basin, a mile in length **N.** by **W.** ½ **W.** and **S.** by **E.** ½ **E.** and a quarter of a mile wide. There is indicated a channel of six or seven fathoms into this basin, and within six to fourteen fathoms, though the shores are indicated as gradually shoaling off. This basin and the harbor as described are rather geographical curiosities than aids in navigation, since the want of an exact survey, the contracted area, the strong and complex tidal currents, and the absence of wind which the topography necessitates, would tend to keep them unoccupied except for temporary refuge of small craft engaged about the sound. No astronomical observations for position have been recorded as taken in the harbor.

Guide§ Islet is located by Tebienkoff in

Latitude	**57° 08′ N.**
Longitude	**135° 28′ W.,**

*Cross Strait, named by Vasilieff, jr., in 1833, and is now locally so called; but it is not the Krestoff Strait of Vasilieff, sr., of 1809, and it forms part of the passage first explored by Hayward, of Portlock's vessel, in 1787.

†After a Captain *Magoun*, who traded on this coast in early times; but on the Russian Hydrographic Chart No. 1494 it appears as **Machin Island.**

‡Named by the Russians about the beginning of this century.

§ Miscalled **Index Islet** on the Coast Survey copy of Tebienkoff's chart of Cross Harbor. The same sketch is erroneous in the scale, whose divisions indicate quarters of miles and not whole miles as marked.

but it is in the sound over a mile and a half **E.** by **S.** ½ **S.** from the entrance of the harbor. Lisianski found the latitude of the anchorage in Cross Harbor to be 57° 08′ 24″ **N.** Tebienkoff gives a sketch of these anchorages on his Chart VIII, with a scale on which quarter miles do duty as whole miles. This has been copied into the Coast Survey Atlas of Harbor Charts of Alaska, Sheet 3, without correcting the scale.

The western shore of Krestoff Strait curves in a westerly direction from the vicinity of the Magoun Group and assumes a generally **NW.** trend for a distance of four miles to the southern entrance of Hayward Strait.

This piece of coast is delineated as rather compact, with a small cluster of rocks named* the **Nadezhda** or **Hope Islets,** and situated about two miles from the Magouns and close to the shore. It is not improbable that there are shoals along this shore as indicated in the vicinity of the entrance of Hayward Strait. The eastern shore of Krestoff Strait trends without important deviation from the vicinity of Magoun Islets **NW.** by **N.** ¾ **N.** nearly four miles to Point Olga. The northern half of this shore is beset with islets and rocks, of which the largest is Pribilie (Profitable) Island, four cables **S.** from Point Olga and about three cables in extent. Over twenty islets and rocks are scattered about the strait, mostly in an isolated manner, and nearly all have been named. Among others in their order northwestward from the Magouns are **Polnoi, Agiak, Dwinoi, Ubiloi** and **Nedostatka** islets, all of small extent. The shore at the northwestern end of Krestoff Strait between the entrances of Neva and Hayward straits is formed by the southern end of **Partoffs-chikoff**† **Island.** This island separates Neva and Hayward straits, trends **NW.** by **W.** and **SE.** by **E.,** and is about six miles long, with an average width of a mile and a half. The southeastern extremity bordering on Krestoff Strait is broadly rounded to the extent of nearly two miles, off which, in a **SE.** direction at a distance of less than half a mile, is a small group of rocks and islets called the **Pribieli Islets.** The northwestern end of Partoffs-chikoff is attenuated, forming the narrow and wedge-shaped **Hayward Point,** which separates Neva from Hayward Strait and forms the **NE.** extreme of the latter. The land gradually descends toward the water from a moderately high hill or bluff, and the extremity of the point is low, wooded, and with *a shoal* extending off a quarter of a mile. Partoffs-chikoff Island is covered with a moderately elevated rolling chain of hills; the shores appear rather compact; nevertheless, according to Russian authorities, a large part of the island is bordered by shoals. It is separated from Kruzoff Island by **Hayward**‡ **Strait.**

Hayward Strait extends from the **NW.** angle of Krestoff Strait, where its entrance is half a mile in width, toward the northern part of Neva Strait, a distance of six miles in a **NW.** ½ **W.** direction. This strait has never been thoroughly surveyed, and charts differ in regard to its details. According to Lisianski and most other Russian authorities, in the middle of the **SE.** entrance sixteen fathoms may be had, and from thence less than a mile in a northwesterly direction lies the small rocky **Kalabri** (or **Kalibri**) **Islet,** on each side of which three to five fathoms are to be had between it and the shore **NE., NW.** and **SW.** One-third to one-half the distance **NE.** and **SW.** between the islet and the shores opposite is obstructed by *shoals* extending from the beaches of the main shores and dry at low water. The islet seems to be bold-to. Less than a quarter of a mile northwestward from it shoals extend clear across Hayward Strait, which according to report are dry, or nearly dry at low water. At high water there appears to be sufficient to float an old-fashioned deep ship's-launch such as that in which Hayward made his passage, and it is not unlikely, from some remarks of Lisianski, that even at low water there may be enough to float an Indian canoe across the flats. These flats extend along the strait nearly a mile and three-quarters from the point first referred to, near Kalabri Islet, and in this space the width of the strait for three-quarters of a mile is very contracted. It is indicated on Russian Hydrographic Chart No. 1397 as not much over a cable in width at some points, but in regard to this there are discrepancies among the charts. A third of a mile **W NW.** from the northern termination of these narrows the flats come to an end, the strait widens to a quarter of a mile, and the depth of six or seven fathoms near the flat increases gradually but regularly to the northwestward. In that direction to two miles and a half from the flats the shores of the strait are indicated as free from obstruction. At that distance *foul ground* or shoals are indicated on the **SW.** shore, and half a mile farther on the northeast shore also, occupying about a third of the whole width on each side, leaving a navigable channel not much more than two cables wide, but carrying at the northern extremity of the strait about forty-five fathoms water. From Hayward Point **W.** by **S.** ¼ **S.** half a mile is an islet not named, which may be considered the **NW.** headland of this entrance of Hayward Strait. There are *two rocks* near it, indicated as visible, as are two others **SE.** two cables from the last mentioned. About this point Hayward and Neva straits come together.

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* After Krusenstern's vessel.

† A proper name of Russian origin, sometimes written **Partoffshikoff,** and which seems to have no synonym in English.

‡ Named by Portlock, in 1787, after his mate, who was the first to pass through Salisbury Sound to Sitka Sound and thus establish the insularity of Kruzoff Island. This passage has also been termed **Soukhoi (Dry) Strait** by Russian and **Soukoi Inlet** by English authorities, names very objectionable on account of their repeated use in this region.

NEVA STRAIT* OR CHANNEL.

This channel opens from the northern angle of Krestoff Strait; it extends thence in a **NW.** by **W. ½ W.** general direction to Salisbury Sound, a distance of some seven miles. It is the regular channel by which the "inside" steamer passage to Sitka is made. The **SE.** entrance is marked by a headland of Baranoff Island, **Neva Point**, from which Olga Point bears east about six cables. A cable to the southward from Neva Point is a small rock above water a short distance **S.** from which twenty-five fathoms may be had. On the opposite or Partoffs-chikoff Island shore and bearing **SW. ½ W.** from the rock off Neva Point half a mile, is another rocky islet which may be considered as the **SW.** extreme of the passage. There are fifteen fathoms close to it and upwards to forty-five fathoms in mid-channel between the two rocks, according to Russian authorities.

From Neva Point **NW.** by **W.** about six cables is another small point, unnamed, apparently bluff and bold-to, as is the shore between it and the rocks at Neva Point. North from it is a small cove. Immediately adjacent to the unnamed point eleven fathoms or more are indicated by Russian Hydrographic Chart No. 1397, but at about a cable length **W SW.** from the shore and very nearly midway between the point above mentioned, which has been called **Whitestone Point**, and a similar point on the southwestern shore of the passage, a *sunken rock* is indicated on the chart. The investigations of Lieut. G. C. Hanus, U. S. N., of the *Jamestown*, have cleared up the doubts in regard to this locality, which is called **Whitestone Narrows.**†

The sunken rock of the charts is a small black rocky islet, called Whitestone Islet, west and northwest from which are *shoals and sunken rocks*. The only channel lies eastward from the islet.

SAILING DIRECTIONS

FOR WHITESTONE NARROWS.

According to Lieutenant Hanus, when the islet is in plain sight steer **NW.** by **N.** for mid-channel of the passage **NE.** from it; when nearly up with the islet hug the shore of Whitestone Point **NW. ½ W.** until the cove opens well. The course is then **W NW.**, with the head of the cove **E SE.** astern, to avoid a sand spit which makes out from the mouth of a stream westward two cables from Whitestone Point. When in mid-channel on the above keep **NW. ½ W.**, giving the southern shore of Neva Strait the preference for the rest of its extent. The least water is about five fathoms.

The rocks west and northwest from Whitestone Islet are well marked in summer by kelp, which must always be avoided, as one of the rocks is nearly dry at low water.

The tide here floods from the northwest and ebbs in that direction into Salisbury Sound.

There appears to be a number of visible rocks and islets on the northern shore until Point Zeal is reached, but mostly visible or dry.

Point Zeal‡ is situated three and three-quarters miles **NW. ¾ N.** from Neva Point, and appears to be a rather high bluff point extending in a westerly direction and with an islet directly west from it a few hundred feet. This point divides the narrow or southeastern portion of Neva Strait from the wider or northwestern portion and also forms the southwestern extreme of a bight or bay known as **St. John Baptist§ Bay.**

It opens obliquely from Neva Strait, of the northwestern part of which it seems to form a natural eastern termination. Regarding the bay as consisting of that body of water **E.** from a line drawn from Point Zeal perpendicular to the axis of the bay, it would then comprise in length a mile and a quarter in an **E.** by **N.** and **W.** by **S.** direction, and in width six or seven cables at the mouth, diminishing to one or two cables at the head. There is one islet on each side of the bay; the depth of water near the shores is small—a shoal bordering the beach almost entirely around the bay except near the points of entrance; this shoal water makes off from one to two and a half cables and (according to Russian

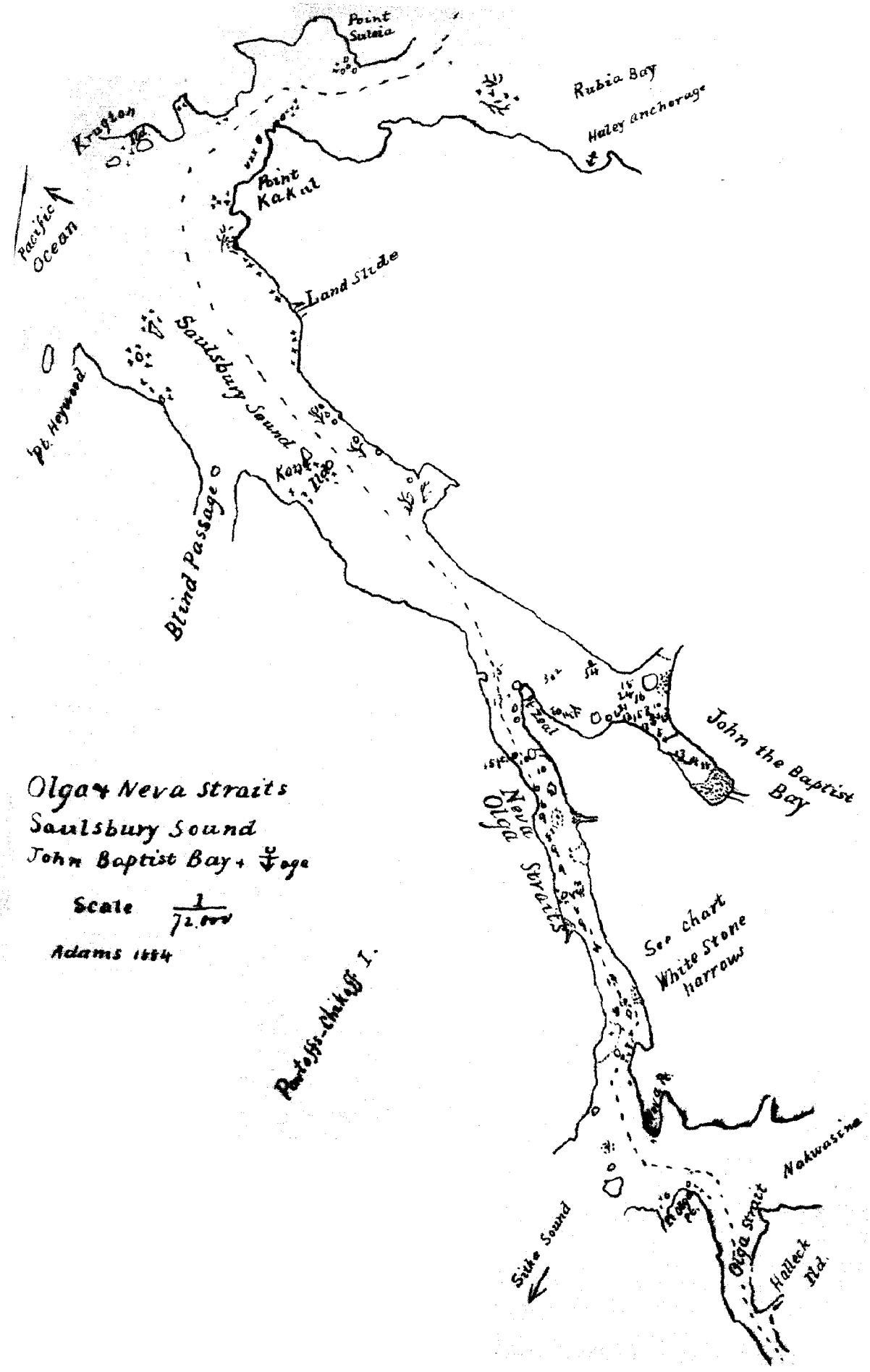
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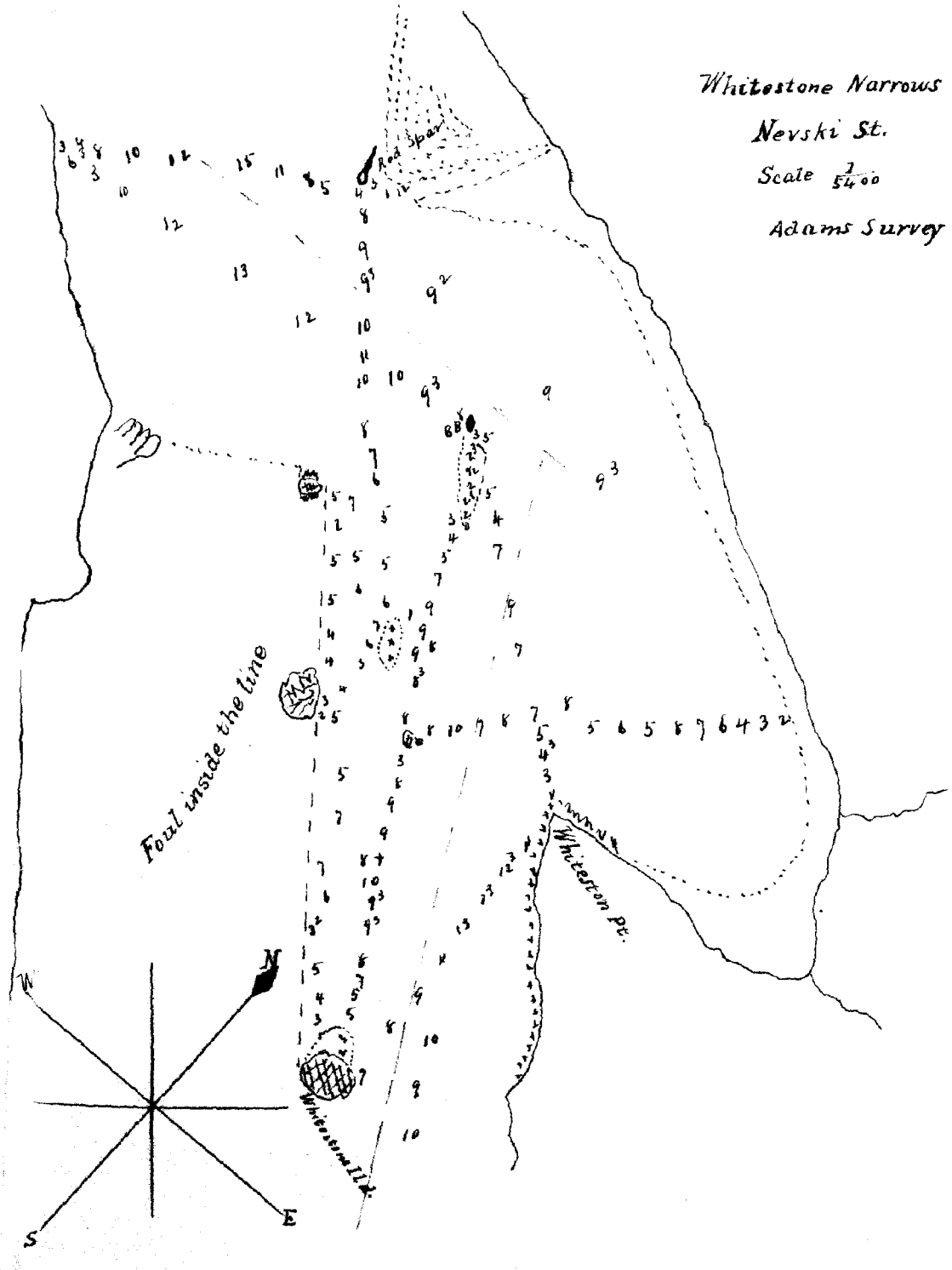
*Named by Lisianski, in 1804, after his vessel. It then included what has been termed **Olga Strait.** The present Neva Channel is the Olga Strait of the Russian chart of 1809, but not of Tebienkoff.

†In Hydrographic Notice, No. 13, 1869, pp. 5 and 15, Meade refers to a reef of white boulders in Neva Strait in mid-channel. The location of this reef is not indicated on his chart nor is it stated in the text where the reef is. It refers, however, to the rock marked sunken on Russian Hydrographic Chart No. 1397, and called **Whitestone Islet** in the above description. He says, "There is a large rock, which is partly out of water and right in the center of the channel. The ground is very much broken, and at low water there is as little as two and one-half fathoms *in the channel* By keeping clear of the kelp, which is readily seen, and with the aid of the lead, a vessel of fifteen feet draught can pass through at low water and the largest steamer at high water." He calls this place the Whitestone Narrows, and refers to a creek on the eastern shore immediately opposite this reef, off the mouth of which is a sand bank upon which the *Saginaw* grounded February 11, 1869. The subsequent investigations of Hanus have shown that there is more water available than Meade supposed.

‡In Russian **Userdie** or **Ouserdie**, was named by Vasilieff as early as 1838.

§**Joanna Predtechi**; named by Vasilieff in 1833, and sometimes called **Baptist Bay, St. John's Bay or Gulf.**


Point Sutwa
Rubia Bay
Haley anchorage
Kraglon
Point Kakait
Pacific Ocean
Land Slide
Saulsbury Sound
Pt. Heywood
Blind Passage
Kayak Isl.
John the Baptist Bay
Neva
Olga
Neva Olga Straits
See chart White Stone Narrows
Nakwasina
Olga Strait
Hallock Isl.
Sitka Sound
Pautoff-Chichagof I.
Olga Neva Straits
Saulsbury Sound
John Baptist Bay + Page
Scale 1/72,000
Adams 1884


Whitestone Narrows
Nevski St.
Scale 1/5400
Adams Survey
Red Spar
Foul inside the line
Whitestone Pt.
Whitestone Ledge
N
S
E
W

Hydrographic Chart No. 1397) includes the two islets above mentioned. The depth of water varies from six to nineteen fathoms in the anchorage, which comprises the navigable portion of the bay east from a line connecting the two islets previously alluded to.

This bay was visited by a party of the U. S. Coast Survey in 1867, who report good anchorage near the head in sixteen fathoms. The shores are bold and rise to mountains, covered with spruce to the water's edge. A stream at its head reaches the bay through a narrow, deep valley between high mountains. From Point Zeal Neva Strait extends in a generally **W. ¾ N.** direction, with a width of about seven cables and bold shores. At a distance of about a mile and three-quarters westward from the point are the **Kane* Islets**, comprising a rock above water and two islets northward from it. The strait eastward from these islets has great depth of water; westward the soundings are mostly less than forty fathoms, muddy bottom. Immediately about the Kanes a danger line is drawn on the Russian charts, indicating that they should not be approached within a cable length. **SW. by W. ¼ W.** from the islets three-quarters of a mile is Hayward Point, to the westward of which is the entrance of Hayward Strait. About **W. ½ N.** from Hayward Point, at the distance of a mile, lies the **NW.** point of entrance into Neva Strait as here accepted. It is a moderately low, wooded point, which should not be too closely approached, as Russian charts indicate a danger line at about a cable and a half from the shore all around this point. On the other shore it becomes difficult to select a point of entrance or to draw any line not of an arbitrary nature as a boundary between Salisbury Sound and Neva Strait. These two bodies of water are so intimately connected that any specified boundary for either is open to some exception. Perhaps the most natural is that which will here be adopted, namely, from the **NW.** point of entrance above mentioned to the Samoiloff Islets and thence to Point Kakul. This is the line of separation adopted by Tebienkoff, Vasilieff and most Russian authorities.

From the **NW.** point **N.** by **W. ½ W.** half a mile lies the largest of the **Samoiloff† Islets.**

This group consists of an islet of small extent and a number of visible rocks, having a generally **W NW. and E SE.** trend, in which they extend less than half a mile and not over a quarter of a mile in any other direction. Nearly in mid-channel between the **NW.** point and Samoiloff Islet is a large rock above water. There is a five-fathom passage between the islet and the rocks. Between the rock and the point over twenty-five fathoms may be had, according to the charts.

On the other hand, George Kozian, an excellent pilot long resident here, asserts that there is no passage at all between the Samoiloff Islets and the **NW.** extreme of the strait; that a *bar or shoal* extends clear across, or so nearly so as to render navigation between them unsafe.

From the islet to Point Kakul the entrance of the strait is free and clear a distance of a mile and a quarter in a **N. ¾ W.** direction. Here the water is reported to be of considerable depth and the shores are bold and free from off-lying dangers. The **NE.** extreme is formed by **Point Kakul‡.** It appears from the charts to be a little peninsula jutting out from Baranoff Island in a westerly direction. Russian Hydrographic Chart No. 1397 indicates *foul ground* near the end of the point, extending a cable length westerly. This point also forms the southwestern extreme of Peril Strait.

This completes the description of the interior passages between Sitka and Salisbury sounds, of which, notwithstanding the fact that they are used monthly by mail steamers, but little is known; and there is not a single astronomically established reliable geographical position on record from all this labyrinth of passages.

The description of the oceanic coast between the two sounds is next in order.

CAPE EDGECUMBE TO SALISBURY SOUND.

This stretch of coast has hardly had a trivial examination; different charts differ fundamentally in delineation of its features and a detailed description at present is quite impracticable. From Cape Edgecumbe north-northwestward (according to Russian Hydrographic Chart No. 1397) one mile, according to other authorities about three miles, is **Neva§ Bay.** It appears to be a triangular indentation three or four cables in extent with bold shores, a stream coming in at its head, and no obstructions to navigation, though the shores of Kruzoff Island northward and southward are fringed with rocks and islets. It is possible that this cove might afford shelter for small craft in easterly storms, but the oceanic ground swell would render it an uneasy and undesirable berth. There is no protection whatever to seaward. The position of the cove is very uncertain from the non-agreement of the charts.

* Of the British Admiralty Chart No. 2431, or **Kan Islets** of Vasilieff, named after Captain Kane, an American pioneer trader on this coast at the beginning of the century.

† Named by Vasilieff in 1833, after one of the Russian explorers of the Aleutian Islands, and called on some charts the **Samoi Islets.**

‡ Or **Kakul**, probably derived from a Russian colonial expression meaning detached, pinnacled, or turrited rocks.

§ Named by officers of the Russian-American Company about 1849. See the company's Report for that year.

North-northwest from Cape Edgecumbe five or six miles is **Shelikoff Bay.*** It is inadvisable at present to attempt any description of this bay, since no two original charts agree in respect to its features, and between Russian Hydrographic Chart No. 1397, Tebienkoff, the Russian-American Company's chart of 1849, and others, the differences are in many respects fundamental. Some must be wrong, and perhaps all are. All agree in representing a large bay with islands near the northern shore and with the northern point of entrance extended prominently toward the south. The position and form of **Beaver** or **Bobrovie Point**, the southern headland, are not similarly represented by any two charts, and in regard to the interior shores of the bay authorities are hopelessly discrepant. Most charts represent at the extreme **SE.** angle of the bay a small cove to which the name of **Port Mary** has been restricted by Russian authorities. A rough sketch of this cove is given on Russian Hydrographic Chart No. 1378, from which it appears to be about two cables in extent **E.** and **W.** and four cables in a **N.** and **S.** direction, with soundings varying from five to seven fathoms over a bottom of gray sand. It would appear to be partly sheltered by some islets and a reef from **N.** and **W.** winds. This sketch was made by Rikord and Khlebnikoff in 1810, who found the variation of the compass to be two and three-quarters points easterly and the geographical position of the middle of the entrance to be in

Port Mary.

Latitude	**57° 07′ N.**
Longitude	**135° 40′ W.**

On the other hand, on the Russian-American Company's chart of 1849 this cove is represented as unsheltered and completely filled with shoals apparently dry at low water, while the contour of the shore-line is fundamentally different from that of Rikord. From verbal reports, received by the United States Coast Survey in 1867 from Russian navigators, *the bay would appear unsuited for affording shelter or good anchorage.*

From its head a trail is said to extend to Krestoff Strait, chiefly along the banks of a large stream which falls in at a point where Port Mary is supposed to be situated. From the above the absence of reliable information in regard to this bay and its shores may be readily perceived.

Between the northwestern headland of this bay and Cape Georgiana the discrepant charts indicate with some approach to unanimity the existence of a projecting tongue of land not improbably identical with **Point Amelia.**†

The point here identified with Vancouver's, according to Russian Hydrographic Chart No. 1397, is situated **NW.** by **N.** ¾ **N.** about fourteen miles from Cape Edgecumbe, and is a sharply pointed, high, bluff, conspicuous tongue of land trending **NE.** and **SW.** and about half a mile in length. **NW.** ¼ **N.** about a mile from its southwestern extremity is the group of **Sea Lion Islets,**‡ comprising four or five islets all of very small extent, most of them mere rocks. They are comprised within an area less than a mile in diameter, and the outermost part is a mile and a quarter from the nearest shore. It would appear that they are high, since they have been seen by various navigators at a distance of more than six miles. According to the same Russian chart two and a half miles north from Point Amelia is the entrance to a cove or bay known as **Sea Lion Cove** or "Gulf,"§ and which is represented very differently on different charts. It appears to be of small extent and requires further examination. **NW.** by **N.** ½ **N.** from Point Amelia three miles and three-quarters, according to the same authority, is situated **Cape Georgiana.**‖

This cape is sharp, narrow, rather high and wooded. Its approximate geographical position is

Latitude	**57° 18′ N.**
Longitude	**135° 45′ W.**

and the variation of the compass in this vicinity in 1833 was thirty degrees easterly.

Sea (Morskoi) Rock lies one mile west from Cape Georgiana—seventeen fathoms close to the rock, over thirty in mid-channel, and over twenty close to the cape, all between the rock and the cape. It

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* Of Vasilieff, sometimes termed **Shelikova Gulf.** This body of water is the **Port Mary** of Vancouver, **Mary Bay** of some authorities, and the **Puerto de Guadalupe** of Galiano's Atlas and of La Perouse; but it is not the original Puerto de Guadalupe of Bodega and Maurelle. It has been mistranslated **Silk Bay** on English Charts. Russian, English and American authorities seem to have reserved by common consent the name of **Vancouver** for the harbor within the bay, if any exists. It was named in honor of Grigori Ivanovich Shelikoff, founder of the Russian-American Company.

†Of Vancouver in 1794, who included what he supposed to be the **Bay of Islands** of Cook between this point and Klokacheff Island. More recent charts restrict the bay, now known as Salisbury Sound, to the waters between Cape Georgiana and Klokacheff Island, but this does not appear from Vancouver's chart to have been his impression. He places Point Amelia sixteen miles about **N. 35° W.** from Cape Edgecumbe and represents three or four small islets trending northward from it.

‡**Stuchi**, named by Vasilieff in 1833.

§In Russian **Stuchia Guba.**

‖Of Portlock in 1787, subsequently called **Stuchi** or **Sea Lion Point** by Vasilieff in 1833; **Point Olga** by Tebienkoff in 1848; (not the Point Olga of others;) and by some authorities identified with Point Amelia of Vancouver.

is entirely omitted by several authorities. Tebienkoff indicates it as a sunken rock instead of an islet, and the Russian American Company's chart of 1849 places another of the same size between Sea Rock and Cape Georgiana.

A mile toward Point Amelia from Cape Georgiana, on the line joining them, several authorities indicate a small solitary islet, which does not appear on other charts. The shore northward and eastward within a mile from Cape Georgiana is mostly bold-to with a few visible bordering rocks. The cape itself forms the southwestern headland of Salisbury Sound,* which opens from the Pacific in latitude 57° 20′ N. The entrance is comprised between Cape Georgiana and **Point Klokacheff**,† which is formed by the southwestern extremity of Klokacheff Island. **Salisbury Sound.**

Point Klokacheff from the sound appears to be about two hundred and fifty feet high, wooded with spruce, and backed to the northward by rather high mountains wooded to half their height, and with bare and rocky summits. From Cape Georgiana Point Klokacheff bears **NW.** by **N.** four miles, being the greatest width of the sound, which at its eastern termination has a breadth of less than two miles; its length in a **NE.** by **E.** ½ **E.** and **SW.** by **W.** ½ **W.** direction is about five miles. It is bordered to the northward by land belonging to the Chichagoff Archipelago, to the eastward by a part of Baranoff Island, and to the southward chiefly by the shore of Kruzoff Island. Hayward, Neva and Peril straits branch from its eastern angles. There are a number of small islands about the shores, though the protecting long "ridge of high islands" mentioned by Cook, Maurelle and Vancouver (unless identical with the Sea-Lion Islets) seem to be unrepresented on modern charts. The U. S. Coast Survey party of 1880 observed the outer shore north and south from Salisbury Sound to be generally high and broken, densely wooded and (June 15) wholly free from snow, and guarded by a throng of islands in front of it, mostly unindicated by the charts. In the description following, Russian Hydrographic Chart No. 1397 has been chiefly relied on; Tebienkoff No. VIII agrees closely with it.

From Cape Georgiana the coast extends two miles **NE.** ¾ **N.**, with minor irregularities and some in-shore rocks and islets, bold-to and wooded, to the southwest point of entrance to **Kalinina Bay**,‡ of small extent, being about a mile in length **NW.** and **SE.** and half a mile wide, with the southernmost portion slightly indented toward the south. **NE.** by **N.** from the **SW.** headland six cables lies the **NE.** headland. The former is bold-to with twenty-five fathoms close in; the latter is marked by a short *reef* extending westward from it. The southern shore of the bay is represented as bold-to; the northeastern shore on the contrary is obstructed to the distance of a cable from the beach. A stream comes in at the head. On the eastern side the U. S. Coast Survey parties report a wooded mountain fifteen hundred feet high, rising very abruptly from the water. The soundings in the entrance are in about thirty fathoms, the depth shoaling rapidly to fifteen, ten, four and three and a half, the latter in the southern part. This bay is asserted to afford good shelter in the southern part. It is manifest that it must receive some part of the oceanic ground-swell at all times, and especially when the wind is from the westward. This suggests that it must be an uneasy berth at best.

There is no detailed plan of this bay, but it is indicated as above by Tebienkoff's Chart No. VIII and Russian Hydrographic Chart No. 1397.

About six cables **N.** by **E.** ¼ **E.** from the **NE.** point of entrance to Kalinina Bay lies the northern point of **Sinitsin Island**.§

This island stands out from the southern shore of Salisbury Sound about three-quarters of a mile in a **N.** by **W.** direction, including the foul ground with which it is fringed and by which it is also connected with the main shore. The whole is about a quarter of a mile wide and of somewhat irregular contour. At its northern end the *foul ground* extends two cables from the shore, the depth then increasing to fourteen fathoms or more.‖ A similar obstruction unites the southern part of the island and the main shore. On the east and west a depth of five to ten fathoms is attained at about one cable from the shore, while at a distance of half a mile over fifty fathoms is indicated. To the

* Named by Portlock in 1787, and identical with the **Puerto de los Remedios** of Maurelle in 1775, of Galiano and of La Perouse; the **Bay of Islands** of Cook in 1778, and later of Lisiansky; **Klokacheff Strait, Gulf** or **Sound** of Vasilieff and other Russian authorities, 1809–1850; **Olga Strait** of Tebienkoff, but not of other Russian charts, and **Olga Gulf** or **Sound** of the Coast Survey Atlas of Harbor Charts. Cook, Maurelle and Vancouver all appear to have regarded the bay as including all between Point Amelia and Klokacheff Island, a fact which indicates a probable faultiness in the present delineations of the shore-line about Cape Georgiana, since, if that promontory projected as much in proportion to Point Amelia as is generally indicated on the charts, the above-mentioned impression would hardly have been conveyed to such an acute observer as Vancouver. A re-examination of this part of the coast, especially the Siuchi Islets, is much to be desired.

† Of Vasilieff; inadvertently termed in a late Coast Survey publication **Point Olga**, a name already applied erroneously by Tebienkoff to Cape Georgiana, and also previously used by Vasilieff for the northwestern extreme of Krestoff Island near by.

‡ Named by Vasilieff.

§ Named by Vasilieff in 1834, after one of the early explorers of the Aleutian Islands. Called **Sinits Island** on British Admiralty Chart No. 2337.

‖ On Tebienkoff's plan of Olga Gulf, and the copy of it in the Coast Survey Atlas of Harbor Charts of Alaska, this sounding has been recorded as seventy-four fathoms by an error.

SE. from Sinitsin Island the shore extending thence to the NW. point of entrance of Hayward Strait is represented on existing charts as nearly straight. The U. S. Coast Survey party of 1867 reports that from a "position in the middle of the sound" this "shore appeared to retreat well to the south, heading in a low valley" on the west of which appeared the high eastern mountain of Kalinina Bay and on the east a "wooded hill about six hundred feet" in height. Two rocks were observed in front of the entrance to this apparent bay, and there may exist here a well-sheltered anchorage, from which Sinitsin Island would keep out the sea due to the westerly winds.

From the northern part of Sinitsin Island the NW. point of entrance bears E. ½ S. about a mile and a quarter, and Point Kakul about NE. by N. ½ N. two miles. In the eastern part of the middle of the sound the Coast Survey sounded in fifty-five fathoms.

Klokacheff Island,* at the northwest point of entrance to the sound, is of triangular form, having sides about a mile in length, its western or longest side extending in a N. by W. and S. by E. direction. It is very high, especially to the NE., falling away westward, and densely wooded on the lower levels. When abeam white streaks or landslides show clearly on the bold shore eastward from it from a distance seaward of eight or ten miles. It is separated from the adjacent land of the Chichagoff Archipelago by **Fortuna Strait** Passage or Channel, as it is variously termed.† This passage is represented as a mile and a half long, less than half a mile in average width, having a general NW. and SE. direction, and as being obstructed by shoals in the northwestern portion so far as to form a cul-de-sac, which may be entered for the distance of a mile in a NW. by N. direction from the middle of the SE. entrance. Very little is definitely known about this strait, which was first indicated on the charts of Portlock and Dixon.

The SE. point of entrance of Fortuna Strait is marked by a small round island. Thence in a S SE. direction the soundings run from ten fathoms at a cable length to twenty-two at four cables and fifty at seven cables from the shore. In the middle of the entrance to the sound no bottom is reported with nearly sixty fathoms of line. From the same point the Chichagoff shore curves slightly toward the north but preserves a general E. by N. direction for nearly three miles and a half to **Krugloi‡ Island**, a small round islet as its name implies, which by its position forms the SW. point of entrance to Peril Strait from the sound. The shore between Krugloi and Fortuna Strait has numerous minor irregularities, and appears to be chiefly rocky and bold with mountainous and heavily wooded country behind it. Foul ground extends off two or three cable's length, and a number of small, round and probably high islands are scattered along this shore, of which Krugloi is the most eastern and **Goloi§ Island** is the most distant from the shore.

This islet is represented as bearing from Krugloi SW. ¾ W. one mile, and from the rocks at the northern end of Sinitsin Island N. by W. a little more than a mile. Hence, in this vicinity, the navigable width of the sound is reduced to about one mile in a N. and S. direction.

Pilots Pamarakoff and Kozian, of the Russian-American Company's service, state that all dangers on the northern shore of Salisbury Sound are exposed or visible, and that any one bound for Neva Strait may steer in mid-channel up to the high bluffs of the Baranoff shore and enter without risk.

PERIL OR POGIBSHI STRAITS.

These straits appear to have been named at an early date, but first appear on Lisianski's chart of 1804.‖ They have been but very imperfectly examined, and nearly all extant information is comprised on Russian Hydrographic Chart No. 1397, with some subsequent corrections by the U. S. Naval and Coast Survey officers, upon which, therefore, the following descriptive notes are obliged to be dependent for their accuracy.

From their SW. entrance between Krugloi Island and Point Kakul the straits have a northerly general direction for fifteen and a half miles, and thence trend nearly east eighteen and a half miles to their junction with Chatham Strait. The western portion is contracted in width, obstructed with numerous dangers, and by the strong and turbulent tidal currents to which it is subject is rendered dangerous and difficult of navigation even for steam-vessels, and should on no account be attempted without a pilot or by any sailing vessel of considerable size.

The shores of this western portion are indented by numerous bays the approximate limits of which are known, while the borders of the wider and eastern portion of the straits are very imperfectly delineated and broken by openings which remain still unexplored. While in the eastern portion shoals occur, among other obstructions, to the westward the water is deep and the rocks and reefs which impede navigation are mostly bold-to.

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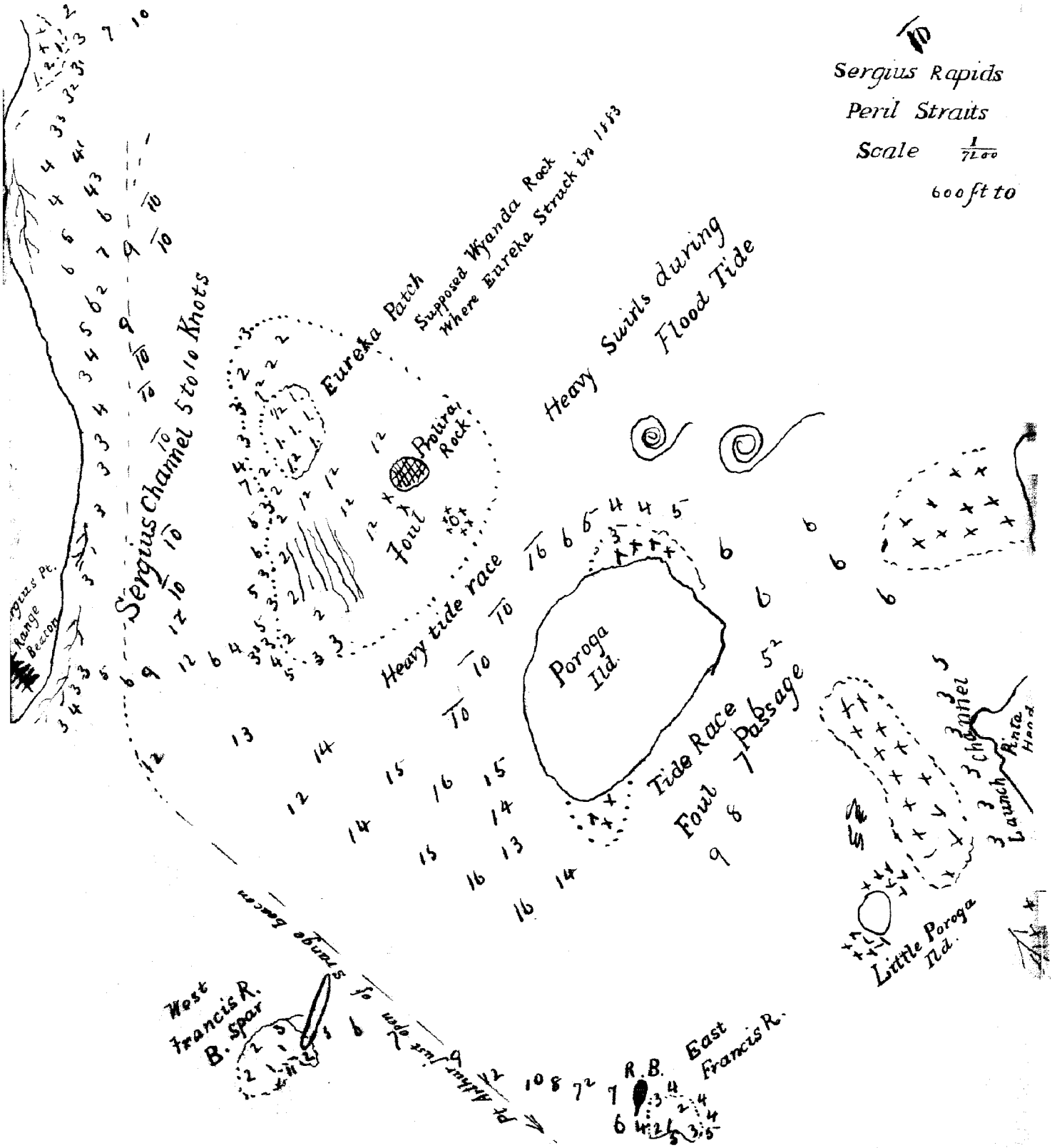
* This name first appears on the British Admiralty Chart No. 2337. It has also been called **Fortuna** and **Vincent Island**.

† This name appears to have been applied by Vasilieff as early as 1848, perhaps with reference to the capture by the Russians in 1819 of a Spanish vessel of that name which had stranded on the Alaska coast in this vicinity.

‡ **Round Island.**

§ **Bare** or **Naked.**

‖ He terms them **Pagoobnoy** or **Pernicious Strait**, and states that they were so called on account of the death there of a large number of Aleuts in 1799 from eating poisonous mussels.


Sergius Rapids
Peril Straits
Scale 1/7200
600 ft to
Sergius Channel 5 to 10 Knots
Eureka Patch
Supposed Wyanda Rock
Where Eureka Struck in 1883
Heavy Swirls during
Flood Tide
Poiraz Rock
Foul
Heavy tide race
Poroga
Ild.
Tide Race
Foul
Passage
Sergius Pt.
Range
Beacon
West
Francis R.
B. Spar
R.B.
East
Francis R.
Launch
Little Poroga
Ild.

Peril Straits at their western entrance are about half a mile wide E. by N. and W. by S., and the navigable width is further diminished by a short *reef* about Point Kakul. In mid-channel over fifty fathoms have been obtained without bottom being reached. From Point Kakul N. by E. $\frac{3}{4}$ E. two and a third miles lies Point Suloia.* **Southwest Peril Strait.**

This point is situated on the western shore of the Southwest Peril Strait, and from Krugloi Island bears NE. by N. $\frac{1}{4}$ N. two and a half miles. It is a rounded but rugged promontory, apparently high, bluff, wooded and backed by a rather high mountain. The shore between it and Krugloi is marked by numerous minor irregularities and is of a rocky character. In the strait are several rocks. These are indicated as high out of water and readily avoided.

The most important is a cluster which is situated almost in the middle of the strait, three-quarters of a mile north from Point Kakul. The water in this vicinity is stated, however, to be of very great depth, and there is on either side of these rocks a clear passage for navigation.

From a point half a mile northward from Point Kakul the shore has a general trend ENE. for a distance of six and a half miles, with some subordinate flexures. A stream comes in at this point; thence the shore extends two miles NW. $\frac{1}{2}$ N. and then trends W. by S. $\frac{1}{4}$ S. nearly four miles to **Ribni** or **Fish Point**, a promontory, high, rocky and wooded, which bears from Point Suloia about one mile NE. by N. $\frac{1}{2}$ N. It takes its name from **Fish Bay** or **Gulf**, which is† formed by the indentation of Baranoff Island just mentioned. It trends E. by N. $\frac{1}{2}$ N. and W. by S. $\frac{1}{2}$ S. four and a half miles, and has an average width of a mile and a half. This bay gets its name from the large number of salmon caught in the streams falling into it. The depth of water within this bay is very great and but one anchorage is surveyed. On the northwestern shore of Fish Bay, about a mile to the eastward of Fish Point Tebienkoff indicates a small cove, not named, in which anchorage may be had in ten fathoms. It is not shown on any chart except Tebienkoff's No. VIII, and there merely indicated—while it has been stated that it is two miles eastward from Fish Point, probably by confusion with Schulze Cove. About two miles and a half eastward from Fish Point is **Schulze Cove**,‡ indenting the Baranoff shore in a N. and S. direction about six cables and about four cables wide.

At its eastern point of entrance is **Piper Island**, of small extent, wooded, with a sand spit making off a hundred yards NW. from the NW. face of the island. The clear entrance is about three cables wide with about twenty-five fathoms in mid-entrance. There are no visible dangers inside the cove and the only caution needed is to avoid the vicinity of the sand spit, where the water may be twenty feet or less in depth at low water. This cove was used by the Russian steamers for shelter during southeast gales; the holding-ground is good, and the anchorage N. and W. from Piper Island in about ten fathoms. A sketch of this cove has been made by Lieutenant F. Symonds, U. S. N., and published on U. S. Hydrographic Office Chart No. 883.

From Point Suloia the coast gradually rounds to the north and west, forming an indentation known as **Suloia Bay**, in which Meade indicates an anchorage without recording any soundings upon his chart. This bay extends W. by N. $\frac{1}{2}$ N. for a mile and a half with an average width of two-thirds of a mile. Directly in the middle of its entrance, W. by S. $\frac{1}{2}$ S. two-thirds of a mile from Fish Point, *a sunken rock* is indicated. Between this rock and the westernmost of the islets off Fish Point is a space four cables wide. Between the rock and the north and south shores of Suloia Bay and within the bay generally, except a few islets near the shore, no shoals or other obstructions to navigation are indicated on any of the charts, yet Meade, who anchored here January 13, 1868, says *a shoal* runs across the bay from point to point. The water shoals suddenly from fifteen to five fathoms, beyond which there is a flat. The best anchorage appears to be midway between the "two points," in ten fathoms water.

Immediately west from Fish Point and N. by E. $\frac{1}{4}$ E. from Point Suloia lie some islets. The narrow passages between them and Fish Point are of course unnavigable, but rather from the strength of the current than from shoal water. The largest of these is named **Rapids** (or **Poroga**) **Island**, and between it and the opposite shore the clear channel is not over a third of a mile in width. From this point to Poverotni (Turnabout) Island the strait is more or less contracted and obstructed by islets and rocks, amongst which, at certain stages of the tide, a bore, race or tide-rip is produced of great strength and alarming proportions. This is especially severe at certain of the narrowest places. The race nearest to Rapids Island is denominated the Second or Southern Rapid.

Immediately north from Rapids Island is a small rocky islet from which *a shoal* extends northward, and ~~(at a distance of a third of a mile N. by E. from the islet is *a detached sunken rock* known as *Wayanda Rock*,§ which never uncovers.~~

The following account of an hitherto unknown danger in the above vicinity is derived from information furnished to Lieut. G. C. Hanus, U. S. N., Assistant Coast Survey, by Pilot W. E. George, of the steamer *Eureka*, which struck upon it April 26, 1883:

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*A name, apparently of native origin, applied by Vasilieff in 1833. *Suloi* in Russian means porridge.

†Named by Vasilieff; **Rubia, Ribnaia** and **Fishing Bay** on various charts.

‡Named by the U. S. Navy for Paul Schulze, esq., president of the Northwest Trading Company of Portland, Oregon, doing business in the Alexander Archipelago. Misspelled **Shulze Cove** in U. S. Hydrographic Notice No. 98 of 1880.

§Sometimes misspelled **Wyanda Rock**; named from the fact that the Revenue Cutter *Wayanda* once touched on this rock.

Eureka Rock.—The **SW.** end of Rapids or Poroga Island on with Suloia Point of Chichagoff Island (which, according to the chart, should bear about **S.** ½ **W.**) passes over the rock, from which the northern edge of Rapids or Poroga Island bears **SE.** by **E.** ½ **E.**, approximate.* There are about eight feet of water over the rock, which appears to be a pinnacle about six feet in extent.

NOTE.—According to the chart, Eureka Rock should be about 400 yards **N.** ½ **E.** from the western extreme of Rapids Island, and a little more from the Chichagoff Island shore.

DIRECTIONS FOR AVOIDING EUREKA ROCK.

Coming from the Northward.—When Liesnoi Island bears to the eastward of north, the vessel being in mid-channel, steer for the western shore of the passage and keep within ~~300~~ 600 yards of it until the **SW.** point of Rapids Island bears **SE.**, when all danger will be cleared. This direction clears also the Wayanda Rock eastward from Eureka Rock.

Coming from the Southward.—When up with the **SW.** end of Rapids Island, in mid-channel, steer for the western or Chichagoff Island shore, and keep within 300 yards of it until the eastern point of Rapids Island bears **SE.** by **S.**, when the course in mid-channel is clear of these dangers.

From Rapids Island the course of the strait to the Opasni (Peril) Islets is **N.** ¾ **E.** three and three-quarters miles with an average width of less than a mile. At a distance in that direction of seven or eight cables lies a small islet, high and rocky, called **Midway (Sredni) Rock.** According to the report of Lieut. G. C. Hanus, U. S. N., *detached sunken rocks* extend nearly two hundred yards **S SE.** from Midway Rock into the channel. However, on the U. S. Hydrographic Office Chart No. 882, accompanying the report (U. S. Hydrographic Notice No. 97, 1880,) these rocks are laid down as extending in a direction **NE.** by **E.** ½ **E.** from Midway Rock. Between these and the reef from Rapids Island there is said to be a clear passage "several hundred yards wide."

In passing through here the Liesnoi Group must be left to the **NW.** and the Rapids or Poroga Group to the **SE.**

The strong tidal currents here cause rapids, the whirls and eddies of which render it at all times a difficult passage. Vessels always wait a favorable tide to go through, which in general is the beginning or ending of a head tide.

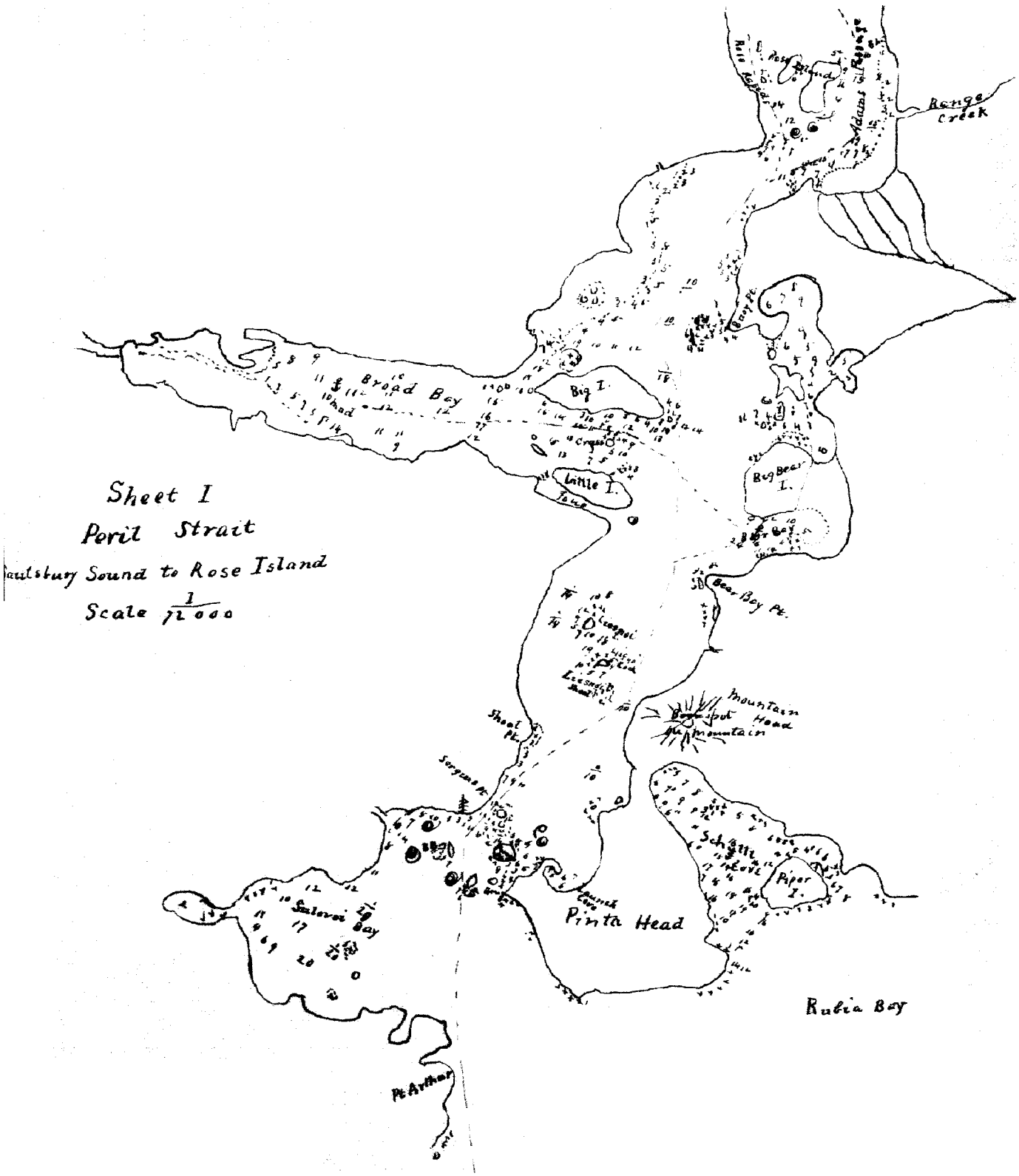
NW. by **N.** two cables from Midway Rock is **Woody (Liesnoi) Islet,** connected with the shore **NW.** from it by foul ground. There are several other small islets in this vicinity. All this group of islets must be left to the northwestward of the vessel in navigating the strait.

NE. three-quarters of a mile from Woody Islet is **Point Siroi,**† apparently a low or marshy point from the name, which is due to Vasilieff. Behind this point to the northward is a slight indentation over a mile along the strait **N.** and **S.**, about a third of a mile in width, and containing several islands parallel with the strait and the shore. In this bight anchorage may be obtained in thirteen fathoms between the southern islands and the shore; soundings in fifteen and twenty-five fathoms are noted in the wake of the point, while in the channel no bottom at fifty is indicated. This anchorage was used by Russian navigators. **W.** ¾ **N.** from Point Siroi about seven cables is the southern headland of **Deep Bay,**‡ an indentation very similar to Suloia Bay in size, form and trend. From the southern headland the shore trends about **W.** by **N.** and then rounds to the northward, terminating in a rounded bight at a distance of about two miles from the entrance. The northern shore has a generally parallel direction to the above, and the bay is about three-quarters of a mile wide **N.** and **S.** The shore at the northern junction of the bay with the strait rounds off so gradually as to suggest no special position for the northern point of entrance. No soundings are recorded, but the bay contains several islets of small size and two others called Big and Little islands respectively.

Malie or Little Island lies immediately northward from the southern headland, separated by a rock-encumbered channel about a cable wide. This island appears to be about a third of a mile long **E.** and **W.** and a cable or two wide. Northward from this and separated only by a channel not more than two cables in least width is **Bolshoi or Big Island,** nearly a mile in length **W SW.** and **E NE.** and over a third of a mile in width. This island is rather high and wooded, and its eastern end projects nearly to the middle of the strait, out from the entrance of the bay, until the eastern extremity of the island bears about **N NE.** three-quarters of a mile from the southern headland of Deep Bay. Close to the eastern point of Big Island lies a small high islet. Nearly in one with the before-mentioned southern headland and the southeastern edge of Big Island, (according to Russian Hydrographic Chart No. 1397,) bearing **NE.** by **N.** ¾ **N.** and **SW.** by **S.** ¾ **S.**, at a distance of two and a half cables from the eastern end of Big Island, is the southern extreme of *a sunken rocky patch,* not named, and of about

* These bearings and distances all depend upon the correctness of the shore-line of Russian Hydrographic Office Chart No. 1397.

† Wet. ‡ Glubokoi.


Sheet I
Peril Strait
Salisbury Sound to Rose Island
Scale 1/12000
Range Creek
Broad Bay
Big I.
Little I.
Big Bear I.
Bear Bay Pt.
Mountain
Shoal Pt.
Sergius Pt.
Schmitt Inlet
Piper I.
Pinta Head
Salonie Bay
Pt. Arthur
Rubia Bay

two cables in extent N. by W. ½ W. and S. by E. ½ E. It is connected with the Baranoff shore by *a shoal*. To avoid this obstruction, which is indicated as submerged, vessels bound northward from Sitka should (if the chart be trustworthy) round the eastern end of Big Island within two cables distance and keep it bearing nothing to the westward of south until abreast of Yellow Point. Conversely, vessels bound for Sitka after passing Yellow Point should keep away S. ¼ W. until up to Big Island at a cable and a half distant, when the island may be rounded at about that distance.

On the eastern shore of the passage beyond the anchoring place northward from Point Siroi, and at a distance of some twelve cables, N. ¼ W. from Point Siroi, is a rounded projection of the shore called **Sredni** or **Middle Point**, immediately W SW. from which *a shoal* extends about one cable to the *sunken rocky patch* first mentioned. Between this and Yellow Point the tides from Salisbury Sound meet those from Chatham Strait. From this point **Zholti** or **Yellow Point** bears N. ½ W. three-quarters of a mile on the same side of the strait. This is a very narrow sharp point, at the end of which is a *submerged reef* or *rock* extending off about a cable in a northwesterly direction, leaving a clear passage two cables wide between it and the opposite shore which here has a north-easterly trend. About N. by W. ¼ W. four cables from Yellow Point, according to the chart, lies **Rapids Point**, on the western shore of the passage, E. by N. from which, separated by a narrow but clear channel, are the **Opasni or Peril Islets**, consisting of three wooded islets of small extent close together and a bare rock. It is believed that the rock on the chart southward from the islets does not exist, but opposite a bight on the east end of the largest islet, in the passage east from the islets, is *a dangerous rock* which only uncovers at extreme low water. For this reason, though narrow, the passage west from the Peril Islets is recommended as the best and most direct.

Abreast of Rapids Point the whole strait is less than half a mile in width, and this is diminished nearly one half for navigation by the islets. Hence at this point, at certain stages of the tide, the so-called *First* or **Northern Rapid** is formed, consisting of a race of great force and velocity. At spring tides it is said to attain a velocity of ten knots an hour. Hence the remaining portion of the Southwest Peril Strait trends NW. ½ N. for about three miles with an average width of seven cables and very deep water. The shores are high, wooded and steep —the effect being to render this part of the strait a dark and gloomy gorge, apparently traversed by a torrent; the whole being graphically described by Langsdorff in his travels. First Rapids.

Two and two-thirds miles NW. by N. ¼ N. from Rapids Point is situated **Pogibshi or Peril Point**, forming the NE. extreme of the Southwest Strait. It would seem to be a narrow hooked point of small extent, trending in a W NW. direction. About two cables SW. from the end of the point is *a sunken rock* which appears to be in one with the western extreme of Poverotni Island bearing NW. ¾ N. The depth of water on this danger is not stated, but sixteen fathoms are laid down close to it. It is easily avoided by keeping in or a little to westward from mid-channel.

W NW. from Pogibshi Point, from which it is separated only by a narrow channel, lies **Poverotni* Island**, a small, high, wooded, rounded island. Southward from this island, extending toward the NW. head of the cove known as Goose Cove, are some *rocks* not shown on the charts.

About W. by S. from Peril Point, in mid-channel, about forty-five fathoms water is indicated, and twenty-two fathoms, muddy bottom, two cables from the western shore in the same direction from the point.

About SW. from Poverotni Island, on the western shore, is an indentation or broad cove which, as also another on the eastern shore, E. from the island, is named **Poison Cove**† on Meade's chart.

About W. from Poverotni Island is another indentation of the western shore into which a stream falls, and where it is probable that anchorage may be had.

Between the southern headland of this unnamed cove and Poverotni Island a distance of five-sixths of a mile in a W. by S. or E. by N. direction is the entrance from the southward to the **Northeast Peril Strait**, or from the northward to the Southwest Peril Strait, whose description is the subject of the preceding remarks. The Northeast Strait differs in hydrographic character from the latter chiefly in its greater width and more gradually sloping shores. It has also been much less thoroughly examined and a large portion of it may be said to remain practically unexplored. Northward and southward large and extensive arms penetrate the shores, the nature and extent of which are only known by Indian reports. The depth of water in Northeast Peril Strait does not appear to have been examined except near a very small part of its shore. The land behind the shores is broken and the most part high. The shores themselves are largely compact, with a tendency in some places to make off shoal. Near the eastern entrance are numerous islands and some very extensive reefs. The average width of the strait is about three miles; its least width, except at the southwestern entrance, a mile and three-quarters, according to Russian Hydrographic Chart No. 1397.

* **Turnabout**; called by **Meade Return Island**, though the sense is more that of a point or pivot, around or about which one turns in passing. It is **Povero Island** of British Admiralty Chart No. 2337. For a long time, 1835–1875, this islet was conspicuously marked by a canoe, which indicated the burial place of a family of Sitka Indians who died of measles in 1835. From this it derived the local name of **Canoe Island**.

† This is probably in commemoration of the death of the Aleuts, previously mentioned, from eating poisonous mussels, but the identification of the spot with the locality where the event occurred would seem to be doubtful from the repetition of the name.

The general course of the strait from its southwestern entrance appears to be **N.** seven miles; then **E.** by **S.** twelve and a half miles; then **E.** by **N.** ½ **N.** six and a half miles, to Chatham Strait. From the southwestern entrance the western shore trends in a generally northwest by northerly direction, and at a distance of four or five miles an opening appears of about a mile in width. The character and extent of the arm of the strait beyond this entrance has not been delineated on the charts nor has any name been applied to it. For five miles northward from this entrance the land is broken, indicating islands, and a large unexplored channel or arm extending in a northwesterly direction is reported under the name of **Hooniah** or **Hoonah** Sound; this has been stated by several navigators, on the strength of Indian accounts, to communicate with the waters of Cross Sound. Later information, however, indicates that this is an error and that high land intervenes for a considerable distance. No one hitherto has penetrated its recesses, but the Sitka Indians are said to call it **Shekak**, the name **Hooniah** being derived from a resident tribe.

Hooniah Sound.

From the eastern limit of this broken land the northern shore of the strait is very compact and trends to the **E.** and **E.** by **S.** nearly nine miles.

From Poverotni Island the shore has a general trend of about **N.** by **E.** ½ **E.** for six or seven miles.

To the eastward of and immediately behind Peril Point is a small cove, which is also protected on the westward by Poverotni Island. Into this cove runs a small stream which has received from the Russians the name of **Gusinaia** or **Goose Creek**, to which the shoaling of the cove, by the transportation of sediment, is probably due. In the cove between Poverotni Island and the shore eastward from it the soundings are indicated as about eleven and a half and five fathoms. The beach seems to be prolonged in a sort of bank for a short distance, upon which there is little water.

Off the eastern head of the cove is a small island with rocks westward from it not on the chart, but not far from the shore. On the opposite side of the strait are the *Poison Rocks*, from which Baranoff's Aleuts in 1799, picked the poisonous mussels which caused the death of over one hundred persons.

NE. by **N.** ½ **N.** two and three-quarters miles from Peril Point is a rounded projection of the shore called **Rock** (**Kamenisti**) **Point**, from a peculiar *rock* which lies just off the edge of the above-mentioned bank a third of a mile north from the point. This rock has six or seven fathoms close to it and is visible at low water. With this exception, from Peril Point eastward the soundings along the edge of the bank vary from ten to forty fathoms over a bottom of sand and shell.

From Rock Point eastward the shore forms a rounded bight for nearly three miles to the heel of **Lowlying** or **Nismeni*** **Point**, which bears **N.** ½ **E.** from the former. This point much resembles Peril Point in extending parallel to the axis of the strait, having a cove **NE.** of and behind it, and in having an islet or rock just off the extremity of the point. The direction of these points would seem to indicate that the currents are or have been stronger from the **SW.** than in the opposite direction.

About half a mile southward from Otstoia Island, close under the Baranoff shore, good anchorage may be found in seven or twelve fathoms water, blue mud or clay bottom, forming excellent holding-ground. This was named Favorite Anchorage by the U. S. Navy, after the steamer *Favorite*, upon which their exploring party embarked. According to their report this anchorage affords excellent shelter from **SE.** around to **N NW.**, the hills being high. From **SW.** around by **N.** to **N NW.** the wind draws down the strait and through inlets, making it a lee shore but raising very little sea. In getting under way for Chatham Strait from this anchorage a good channel with seven fathoms of water will be found between Otstoia Island and Nismeni Point, keeping moderately close to the island to avoid the sand spit making off the point. Nismeni Point trends **NE.** and **SW.** with a rock or islet in the wake of its point a short distance **N NE.** The bank along shore, previously referred to, is continued along the bight from Rock Point to and around the cove **NE.** from Nismeni, at which locality the chart indicates that it ceases, and the shore beyond is represented as mostly steep-to. In this vicinity there are a number of islands. A quarter of a mile **NW.** by **W.** from the heel of Nismeni Point lies **Off-lying, Distant, Ostovia** or **Otstoia Island**, of very small extent, perhaps two cables long in an **E NE.** and **W SW.** direction; *a shoal* extends to a cable and a half **SW.** by **W.** ½ **W.** from its western end, while *another shoal* makes off **NE.** by **E.** ½ **E.** to the length of a cable from the eastern end of the island. Between Otstoia Island and the shore is a passage which was principally made use of by Russian navigators. It is about two and a half cables wide over all, and the half of this near the Baranoff shore is occupied by *the bank or shoal* which here fringes the coast. In the channel close to the island eight and ten fathoms water may be had and there are no obstructions. Though very narrow this passage appears to have been preferred by the Russian traders, whether as better known, freer from strong currents or otherwise, is nowhere recorded.

Favorite Anchorage.

Seven cables **W.** by **S.** from Otstoia lies **Yelowoi, Elovoi, Firtree** or **Spruce Island**, of rectangular shape, high, wooded, and about a quarter of a mile in extent; its eastern shore steep-to, but from south round by west to north beset with *shoals* which extend **SW.** ¾ **W.** nearly a mile with a width of a

* Called **Niamenna Point** on British Admiralty Chart No. 2337.

third of a mile, with some dry but many submerged rocks to **Round** or **Krugloi Island**, which forms the western buttress of these reefs, which spread like a net between the two islands and appear to unite them at low water. Krugloi is somewhat smaller than Spruce Island but otherwise similar. Its western shores are represented as bold-to. These islands seem really nearer together than the chart indicates; each bears a clump of spruce which look like one clump as the observer rounds Poverotni Island. On the southern shore of Krugloi Island is a fine sand beach.

Seven cables **S.** by **E.** ¼ **E.** from Krugloi lies *a bank* or *patch of reefs and rocks* forming a *danger*, as they are visible only at low water. This patch has no name on the charts, and is represented as seven cables long **NW.** by **N.** ½ **N.** and **SE.** by **S.** ½ **S.** and three or four wide. There appears to be a clear passage between it and Krugloi. Between Spruce and Otstoia the passage is three-quarters of a mile in width, but contracted by not less than two cable lengths by the foul ground westward from Otstoia Island. The soundings vary from eight fathoms or less at the edge of the Otstoia shoal to eighteen or more just east from Spruce Island. In the middle of the passage about ten fathoms are indicated. In passing through this passage, to avoid the extension of the Otstoia shoal, which appears to be imperfectly known, the navigator will find it prudent to pass nothing to the eastward of mid-channel until the tangent of the Baranoff shore east from Nismeni Point bears nothing to northward from **E.** by **S.**, and also to avoid rounding to the northeastward (when bound north) or to the southward (when bound for Sitka) before Otstoia Island bears **E.** or **E.** by **S.** four cables. It should not, in any case, be approached nearer than two and a half cables except at the southeast.* On account of *Cozian Rock* this passage is not recommended. ***Danger.***

There is also an anchorage, formerly much used by Russian vessels in the cove **N.** and **E.** from Nismeni Point, where a vessel may anchor in ten to fifteen fathoms, soft muddy bottom, with good shelter in southerly gales. The holding-ground here is not as good as at Favorite Anchorage according to Lieutenant Hanus.

The positions of the islands off Nismeni Point given here are taken from the charts, but there is some reason to think that they are not very correct, especially Spruce Island. There is no means of correcting them at present.

About **N.** by **E.** from one-half to three-quarters of a mile from the eastern end of Otstoia Island lies *a dangerous rock*, called, after one of the Russian pilots who reported it, Cozian Rock.† There are probably three feet on it at low water. By passing between Otstoia Island and Nismeni Point this danger is entirely avoided, and navigators should adopt this course. ***Cozian Rock.***

About **N.** by **E.** and three-quarters miles from Otstoia lies **Poperechni**‡ **Island**, of small extent, high and apparently bold-to. It is situated about half a mile from the northern shore. About four and a half miles eastward from it, on the north shore of Peril Strait, is a small schooner anchorage, guarded from all but westerly winds, behind an island which becomes a peninsula at low water. The bottom is soft and the water rather deep. About two miles and a half farther eastward there is a bight with two rocky islets close to the shore. None of the charts show more than one.

From Nismeni Point the southern shore-line trends to the eastward with minor irregularities and a generally northward convexity. Two miles eastward from Nismeni Point, in the middle of a stretch of beach, (between 17 and 12 fathoms as marked on the charts,) the U. S. Coast Survey observed the latitude May 21, 1880, to be **57° 33′ 34″ N.**, about two miles farther north than the charts indicate and considerably farther west, though the observations for time were not very good. There are several reasons for believing that all this part of the archipelago is represented too far south by several miles, but further data are needed before changes can be made on the charts.

Eastward two miles and a half from the point *a rock* is indicated northward about two cables from a small projection of the shore. Three and a half miles **E.** from Nismeni Point lies **Sandy**§ or **Pestchani Point**, a low projection of the shore, formed by the debris brought down by a small stream which here falls into the strait. Beyond it the shore curves rather abruptly to the **SE.** and is penetrated by several inlets, but in this direction the features of the charts are merely approximations and very little dependence is to be placed upon them from Pestchani Point to Chatham Strait.

A mile and three-quarters **SE.** from Pestchani Point is the entrance of an inlet extending inland southward according to Tebienkoff two miles or so, dividing into two arms at its head, into each of which a stream falls. There is a small island in this inlet, and the land to the eastward of the entrance, whether one or not, appears from Peril Strait much like a large island. The shore is much broken here. Northward from this inlet Tebienkoff indicates an islet and some rocks on the opposite shore of Peril Strait. The *Jamestown* party in May, 1880, landed behind a small island or low-water peninsula hereabouts and camped. A couple of miles farther eastward are two islets near the shore, and

* The area **N.** from Poverotni, **E.** from the danger above noted, and **S.** from the islands near Nismeni Point, has been termed on Meade's chart **Deadman's Bay.**

† The Russian steamer *Nikolas* struck it in 1854, and it has been called **Nikolas Rock**; the steamers *Gussie Telfair* and *California* and schooner *Nellie Eads* touched it in 1875. The name would rightly be spelled Kozian.

‡ Meaning across or on the other side; mistranslated **Broad Island** on some charts.

§ Mistranslated **Stony Point** on some charts.

N NW. from them a small bight into which a stream falls apparently from a good-sized inland lake. Tebienkoff, though showing several details not on other charts, is, on the whole, nearly as inaccurate as any in regard to the shore-line of this locality and the neighboring islets.

About seven miles SE. by E. ½ E. from Pestchani Point an opening called **Hanus Inlet** exists which has not been fully explored, and has been supposed by some to connect with the unexplored opening known as Kelp Bay which enters from Chatham Strait some miles south of the junction of the latter with Peril Strait. Tebienkoff states that there is a portage of several miles between them.

An island is represented in the mouth of the opening on Peril Strait, another one off its eastern headland, and two more about two miles SE. from this point on the Baranoff shore. Between these two a chart in the Russian American Company's Report for 1849 indicates an anchorage, but with no details. Tebienkoff has a small bight behind the two islands and represents *a long reef* as extending in a northerly direction from the most western one.

On the northern shore of Peril Strait, about six miles E. from Pestchani Point, is a little rounded indentation of the shore-line known to the Russians as Lindenberg Harbor,* consisting of a cove protected by high land from west round by north to E SE. and about two cables in extent. The eastern headland of the harbor is formed by a bluff, steep-to, trending inland toward the northeast, and separated from high land to the northward by a valley which terminates in a sand beach at the head of the cove. There is a beach of sand or shingle around the greater part of the cove; elsewhere the shores appear bold-to or precipitous and rise rapidly to the height of about fifteen hundred feet, densely wooded. About the middle of the inner part of the cove twelve fathoms may be obtained at about a cable length from the shore. Somewhat farther south, an eighth of a mile from the heads of the cove and two cables from the beach, nineteen fathoms may be had with more room to swing. Somewhat more than a cable S. by E. from the point at the end of the eastern headland of the cove is a *rock awash* at high water. This is probably what was intended by the islet represented on Russian Hydrographic Office Chart No. 1397, which, as such, does not exist, and if intended for the rock is wrongly placed much too far off shore.

Lindenberg Harbor.

This rock is represented on U. S. Coast Survey Harbor Chart No. 731 of Lindenberg Harbor, in 1869, and was named *McClellan Rock* by the U. S. Navy in 1880. There is a clear passage with more than five fathoms, hard bottom, between the rock and the point north from it at certain stages of the tide. This locality is only deserving of attention because of the rarity of convenient anchoring places in this part of Peril Strait. For the most part the water is too deep to afford safe or convenient anchorage.

There are no houses at this cove at present. Wood and water may be obtained.

The high land back of the harbor rises about 2,000 feet. The east headland of the harbor forms a rather conspicuous point according to the charts. It is situated about five miles SW. by W. ½ W. from the northeastern point of entrance of Peril Strait. Its approximate geographical position is

Latitude	**57° 29′ N.**
Longitude	**135° 02′ W.**

and the variation of the compass was about 29° 15′ easterly in 1869.

The easternmost portion of Peril Strait is occupied by a number of islands and guarded by several extensive shoals or reefs. These it is impossible at present to describe with accuracy, either as to form, number or position. About five miles NE. by E. ½ E. from Lindenberg Harbor lies the point named by Meade, in 1869, **Point Craven,**† which would appear to be a somewhat conspicuous point extending in an E SE. direction. At its base a shoal or reef is erroneously represented on many charts to extend about seven cables in an E. by S. direction. This point is bare of trees, with its end forming a small hillock; directly off this is a small bluff island with some scrubby trees and a single tall pine, making a conspicuous mark. Off the island are two rather low, rounded, dry rocks fifteen or twenty feet high, with two fathoms between them and the point. A view of it is given by Meade on U. S. Hydrographic Chart No. 225. *There is no reef here.* The islets are steep-to. The point is supposed to be situated in (approximate)

Latitude	**57° 29′.0 N.**
Longitude	**134° 57′.0 W.**

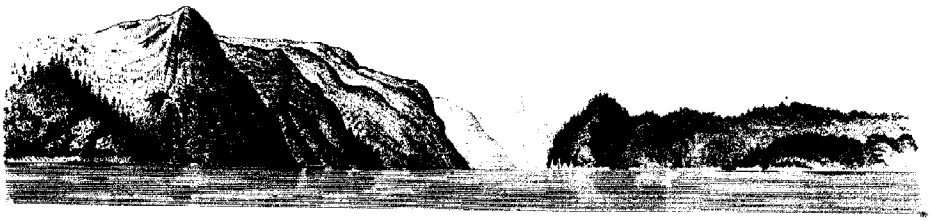
On most charts Point Craven is represented, following Russian Hydrographic Chart No. 1397, as projecting to the eastward far beyond **Point Hayes,**‡ which lies northward, separated from it by Sitkoh Bay. Tebienkoff represents Point Hayes (under the native name of **Point T'liakinikut**) as

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* Named by Vasilieff in 1833.

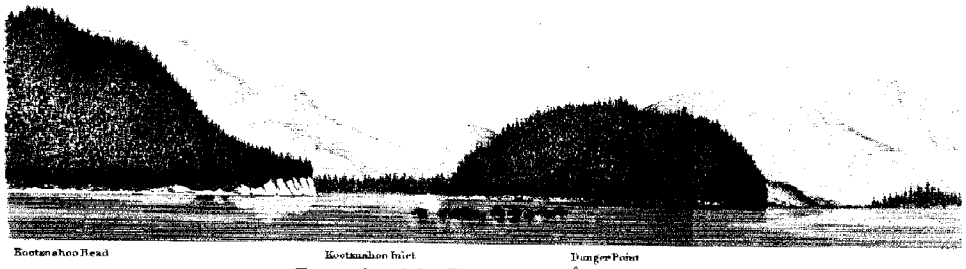
† Otherwise **T'liakhini-kut** (miscalled **Tlakinikut**) of some authorities, but not of Tebienkoff, and the **Point Williams** of Homfray.

‡ Named by the U. S. Navy in 1880.



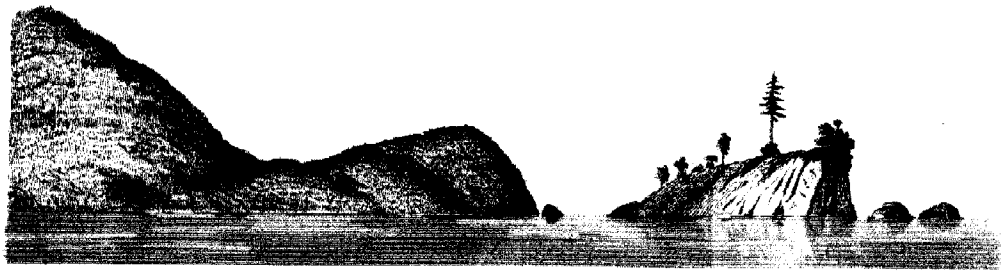
Kasa-an Bay Cape Grindall E. ¾ N. 12 Miles.

(From U.S. Hydr. Office Chart No. 225)



Kootznahoo Inlet, Danger Pt. SE. ¾ E. 4 Miles.

(From U.S. Hydr. Office Chart No. 225)



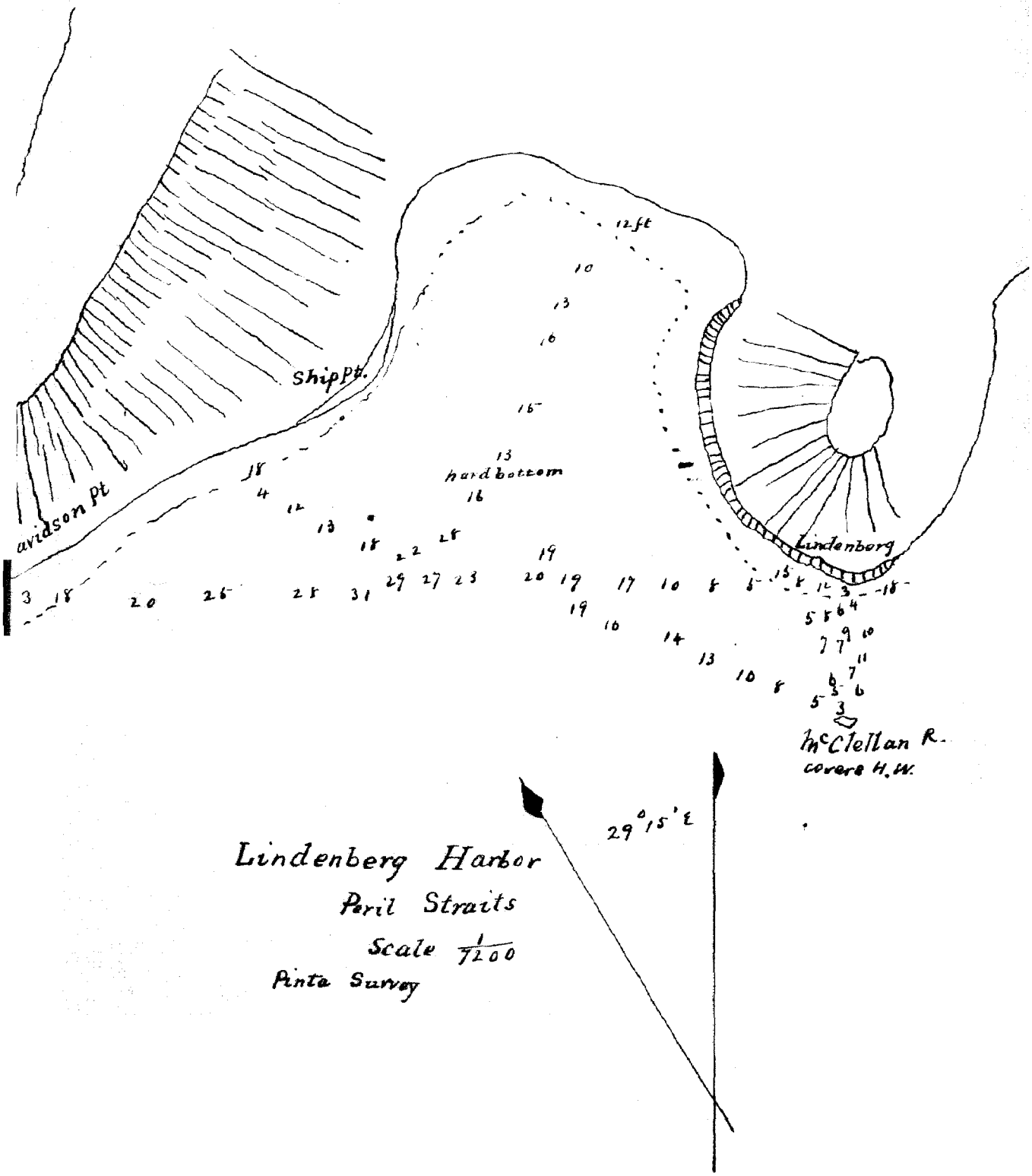
Pt. Craven, N E. point of Peril Strait, N N W. 1½ Miles.

(From U.S. Hydr. Office Chart No. 225)



Pt. Thatcher, S E. point of Peril Strait S E. 3½ Miles.

(From U.S. Hydr. Office Chart No. 225)



Lindenberg Harbor

Peril Straits

Scale 1/7200

Pinta Survey

extending much farther east than Point Craven. Observations made in 1880 indicate that the extreme of Point Hayes lies about N. by E. ¾ E. a mile and a half, and consequently forms the northeastern point of entrance to Peril Strait, and is continued in an E. by S. direction, as represented by Tebienkoff, in the *Morris Reef** for a distance of a mile and a half or more. ***Morris Reef.*** The point is broad, rounded and rather low, continued inland as a high wooded ridge. According to the observations of the U. S. Navy, from the end of Point Hayes there is first a ledge of rocks, dry at low water, then a small wooded island and two bare islets, then a reef of sunken rocks. About a quarter of a mile from the island there is a dry rock. The remainder of the reef consists of numerous detached rocks with deep water between them, some awash at high water, others only at low water. About a mile NW. from Point Hayes *a reef of sunken rocks* is said to make out from the shore in the same general trend as the point and extending eastward. Russian pilots say this shore should not be approached within a mile and a half.

Point Thatcher,† also named by Meade, forms the southeastern point of entrance into Northeast Peril Strait from Chatham Strait. It appears to be a rather broad promontory, of which the western angle is within the entrance, and from the eastern angle of which projects, in a NE. by N. ½ N. direction, the *Coleman reef or shoal*, a quarter of a mile wide and about a mile long. The point itself terminates in a bare skull-shaped knoll, on a neck behind which are a few trees, and in front of the point is a pyramidal rocky islet.

Between the northern end of Coleman Reef and the southeastern end of Morris Reef lies *another reef*, reported to be a mile and a half long in a NW. and SE. direction and about half as wide. The clear passage between this, which may be called *Midway Reef*, and the Morris Reef is indicated as two miles and three-quarters wide in a N NW. and S SE. direction. The southern or Thatcher passage between the Midway and Coleman reefs is supposed to be about a mile wide in a N. ¾ W. and S. ¾ E. direction, but all these details are in need of confirmation. Behind the Midway Reef in a westerly direction, and separated from it by a clear channel, lie a number of islands, of which only two are definitely established and these are unsurveyed. The southern or larger of these is called by Meade **Traders Island,**‡ and is about two miles in extent. Between it and the shore, southward, anchorage is indicated in sixteen fathoms, but with no details. Northward, about a mile and a half from it, though placed much nearer on the charts, is **Fairway Island,** small, high and conspicuous, about a quarter of a mile in extent, and furnishing a useful mark for entering Peril Strait from the eastward, the other land being generally lower.

The northern part of Fairway Island is reported to bear E. by S. ¼ S. over a mile from the islets off Point Craven, and S SW. two miles from the eastern part of Morris Reef. A SW. by W. or NE. by E. course laid to pass at a distance of half a mile north ~~or south of either ridge~~ of Fairway Island will carry in or out of Peril Strait all clear so far as known dangers are concerned. The tides here are reported at twenty-two feet.

The tracks used by the Russians included the above or main track to and from Peril Strait; and also a track through Thatcher Passage, south of Traders Island. This was used for the purpose of touching at inhabited points among these islands for trade.

Lastly, a track was made use of, passing through the Thatcher Channel, and then in a W. by S. ¾ S. direction south of all the off-shore rocks and islands in the strait to an anchorage between two islets on the Baranoff shore. Enough is not known to warrant further details, and the above is subject to revision from better information. The land south, southwest and southeast from Point Thatcher is represented by Meade as much broken; the passages are not indicated on his chart in such a manner as to suggest actual exploration but rather an attempt to chart Indian rumors.

From Point Thatcher the Baranoff shores trend SE. ¼ E. some thirty-six miles, with a number of openings yet unexplored or insufficiently explored. This part of the shore of Chatham Strait, containing no known harbors, is of little importance to the navigator. The most considerable of the unexplored openings is called Kelp Bay and lies eight miles SE. from Point Thatcher. Its southeastern part contains some islands. This portion of Chatham Strait will be considered later, in accordance with the plan adopted for the sequence of these channels in the text.

STEPHENS PASSAGE.

In accordance with the usual arrangement this passage will now be taken up, to be followed by those westward from it. Unfortunately the information is extremely meagre and imperfect, notwithstanding the fact that the mineral deposits of its shores make this at present one of the most important channels of navigation in the territory.

This extensive body of water was named by Vancouver. It extends from the southern entrance about forty-five miles in a NW. ½ W. direction with an average width of about four miles. Thence

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*Named by the U. S. Navy, in 1880, after the Hon. W. Gouverneur Morris, U. S. Collector of Customs at Sitka.

†**Shkaliakh** (or **Schkaliakh**) of the natives, and **Point Coleman** of Homfray.

‡Erroneously **Traitor's Island** on British Admiralty Chart No. 2337, edition of 1882.

it trends in a generally **W.** ¼ **N.** direction about twenty-nine miles, much obstructed by islands, some of large size, and according to Meade has not anywhere a clear water-way of more than three and a third miles in width while the average is much less.

The southern entrance to this passage lies between Points Hugh and Windham, referred to and described in connection with Frederick Sound. (Page 129.)

From the vicinity of Point Hugh the southwestern shore of Stephens Passage has a general trend of **NW.** by **W.** about forty-four miles to Point Arden. This stretch of shore is high, rocky, mostly bold-to, with few islets about it and those rather close in, and with numerous minor irregularities, but, so far as known, not a single harbor. Quite different is the opposite or continental shore. From Point Windham in a **NW.** by **N.** direction the shore presents a series of little bays of about a mile each in extent, separated by small points, before each of which *rocks* or *a patch of foul ground* is indicated. The first of these is **Point League**, named by Meade, about two miles **NW.** from Point Windham. **NE.**, behind the bight separating the two points, lies a peak, which Meade estimated to be two thousand feet high and named Mount Windham.

N NW. from Point League, a mile and a half, lies **Point Lookout**, also named by Meade in 1869. A *very dangerous reef*, awash at high water, extends off this point a mile and a half. In the bight between this and the next (unnamed) point to the northwestward lies an islet. Meade recommends that the eastern shore of Stephens Passage between Points Windham and Astley be *nowhere* approached within one and a half to two miles.

According to Meade, **NW.** by **N.** five miles from Point Lookout is situated **Point Astley**, named by Vancouver, and forming the southeastern point of entrance to an opening of which the northwestern headland was named by Vancouver **Point Coke**; this bears from Point Astley about four miles **NW.** ½ **W.** Both of these points appear to be guarded by rocks or shoals at their extremities, and hence care should be observed in approaching them within a mile.

The entrance between them is that of Holkham* Bay, named by Vancouver, and averaging four miles in width **NW.** and **SE.** and about seven miles long. About a mile within the entrance and nearly equidistant from Points Coke and Astley lies **Harbor Island**, quadrangular in shape and somewhat over a mile in extent. Toward this island from either shore of the bay Vancouver found shoal water making out somewhat in the shape of a bar, these banks trending **NW.** ½ **N.** and **SE.** ½ **S.** respectively, and having deep water **NE.** and **SW.** from them and also for some distance between their extremities and the island. So far as can be judged, from the imperfect data at hand, the passage **SE.** from Harbor Island, between it and the **NW.** end of the southeastern shoal, is the wider and more commodious of the two.

Holkham Bay.

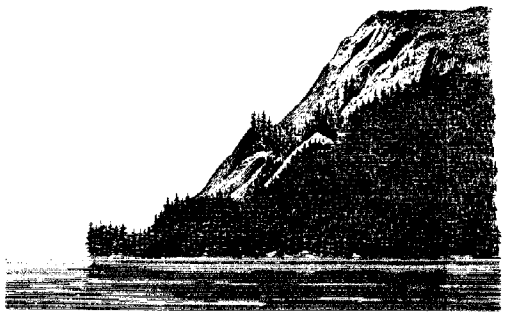
It would seem as if the island were bold-to and the passages on either side of it from half a mile to a mile and a half in width. East from Harbor Island a mile and a half lies **Sand Island**, of about the same extent, and the anchorage is indicated by Meade midway between these two, the depth of water being eight fathoms. The holding-ground is good, and Meade was able to ride out a gale with only twenty-two fathoms of cable. North from Harbor Island a short distance lies Round Islet, of small extent. **NE.** by **N.** one mile from the first mentioned lies **Soundon** or **Sumdum Island**, a little larger; and between it and Sand Island another round small one, called Bushy Islet, bearing from Harbor Island a mile and a half **NE.** by **E.**

These islands were all named by Meade, who states that a native village exists on Soundon Island; that the tides rise twelve feet (in Hydrographic Notice No. 13, 1869, he says the rise and fall of the tide is fully fifteen feet) and the bay affords good anchorage except for one disadvantage, which is that the surface of the water is more or less covered with floating ice derived from sundry glaciers which discharge themselves into the water, especially in the vicinity of Point Coke. Floating ice was witnessed by Vancouver's party in August, 1794, who describes the bay as bounded by lofty mountains. The bay is not well protected from southwesterly winds, and even a southeasterly wind gets up a sea that makes a berth here uncomfortable. About two and a half miles **SW.** from Point Coke, according to Meade, nearly in the middle of Stephens Passage, are the **Midway Islands**, two small islets noticed by Vancouver, situated to the southwestward of Point Coke, and not to the southward of it as given on British Admiralty Chart No. 2431, old edition. Meade adds a few rocks **S.** from them, on his chart, all of which seem to be visible. He also gives a view of the islands, which are low and mostly bare, with a few scattered trees and steep-to on either hand. They form an excellent landmark for making Holkham Bay from the northward. Beyond Point Coke the shore is again broken by numerous little coves and points, but does not appear to be so much infested with detached rocks as is the case farther **SE.** This broken coast extends from the neck of Point Coke in a generally **W NW.** direction about eight miles to **Point Anmer** of Vancouver. The land between Point Coke and the present promontory is backed by lofty and rather bare mountains, their sides scarred by avalanches and displaying, about three miles **E SE.** from Point Anmer, a remarkable cascade which falls from a ravine into the sea.

Holkham is a good landmark for the Midway Isls.

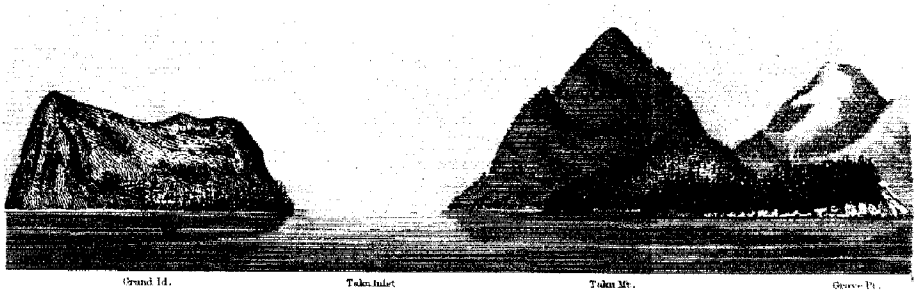
About two miles **W NW.** from Point Anmer, across an opening, lies a point named by Vancouver **Point Styleman**, which is situated, according to the same authority, in latitude **57° 53′ N.** It forms the

* Locally often called **Sumdum Bay.**



Pt. Windham NW. ½ N. 5 Miles.

(From U.S. Hydr. Office Chart No. 225)



Taku Mt. NW. 5 Miles.

(From U.S. Hydr. Office Chart No. 225)



Point Augusta NW. by N. 20 Miles.

(From U.S. Hydr. Office Chart No. 225)



Midway Ids. Stephens Passage S. 1½ Miles.

(From U.S. Hydr. Office Chart No. 225)

northwestern point of the before-mentioned opening or entrance whose inner expansion was named by Vancouver Port Snettisham. This harbor is irregularly T-shaped, the main stem extending from the previously mentioned headlands four and a half miles in a N. ¾ W. direction with a breadth of about two miles, while the inner or transverse portion of the port extends six miles W. by N. and E. by S. and appears to be not much over a mile in width. Each of these arms or East and West branches of the inner portion terminates at a sandy beach where comes in a fine run of fresh water. Just north from and within Point Styleman is a small cove with a small island near its northern point of entrance. The shores are high and steep, the forest is comparatively meagre, but it does not appear that any glaciers fall into this harbor. **Port Snettisham.**

From Point Styleman **NW.** by **W.** ¾ **W.** six miles lies the entrance to **Limestone Inlet**, named by Meade in 1869, a small angular indentation of the shore extending **N.** ½ **E.** about three miles with a width of a mile and a half at the entrance. No details appear on the chart except that on the western shore are some high "limestone bluffs."*

Eight and a half miles from Point Styleman, about **W NW.**, beyond the limestone bluffs of Meade, is the entrance to **Taku Harbor**, a local and native name of old date, first applied to this locality by Vasilieff in 1848.†

It is a neatly rounded basin six or seven cables wide **E.** and **W.** and eight or nine long **N.** and **S.**, and is entered by a passage about two and a half cables wide between **Stockade Point** on the eastern side of the passage and **Grave Point** on the opposite or western shore. Both are wooded, comparatively low points, from which high land rises rapidly to peaked, often snow-capped, mountains.

On Stockade Point is a ruined block-house and stockade, built by the Hudson Bay Company for defense. On Grave Point are a few graves. The entrance is clear of all obstructions, and within the harbor none exist, so far as known, except the mud flat in front of the Indian village, which is formed by the wash from a stream and extends southward from the head of the harbor less than three cables, having from one and a half to three fathoms upon it. The depth of water in the harbor varies from four and seven fathoms near the shore to nineteen or twenty in the middle of the harbor. The anchorage is indicated by Meade to be in ten or twelve fathoms, muddy bottom, in the middle of the basin, about four cables north from Stockade Point.

The approximate geographical position of the anchorage at Taku Harbor is

Latitude	**57° 59′5 N.**
Longitude	**133° 56′5 W.**

and the variation of the compass is about 30° easterly.

No directions are necessary for entering this harbor, which is one of the best and snuggest in Alaska, and which has been surveyed by Meade, who publishes a sketch of it on United States Hydrographic Chart No. 225. The entrance being small and the shores high and densely wooded, it is as well to point out that the proximity of Grand Island (the only island of any consequence in the eastern part of Stephens Passage) marks the harbor; so that when the middle of the entrance of Taku bears **N.** one mile, Grand Island bears **W NW.** four miles.

Taku Harbor, under a treaty with Russia, was formerly the site of a Hudson Bay Company's trading post, established in 1840, which was visited by Sir George Simpson in 1841.

Large numbers of deer and sheep skins, besides the continental furs, were obtained from seven tribes of natives who were said to visit this post for trade. The fort comprised "good houses, lofty pickets and strong bastions," and was occupied by two officers and twenty-two servants of the company. Meade refers to the natives of this vicinity, commonly called the Takus, as "wealthy, warlike, friendly," in 1869. Sir George Simpson states that "one of the hills, near the fort, terminates in the form of a canoe, which serves as a barometer. A shroud of fog indicates rain, but the clear vision of the canoe itself is a sign of fair weather." "The big-horn sheep and mountain goat are very numerous in this neighborhood."‡

Meade, in 1869, reported that the place had been deserted for some years. It is uncertain whether there is at present any white settlement at this place. Meade gives a view§ of the vicinity of the entrance of Taku Harbor where Taku Mountain is conspicuous from its peaked shape. It lies **NW.** by **N.** from the harbor at the distance of a mile. From the entrance **Grand Island** lies about four miles **W NW.**, in the middle of Stephens Passage. This island appears to be about three miles long **NE.** and **SW.** and less than two miles wide. A view of it is given by Meade. It seems high, steep-

*"From a remarkable-looking streak on the side of the mountain forming the west side of the inlet I called it **Limestone Inlet**, and the mountain **Limestone Bluff**."—MEADE, *l. c.*

†The people living hereabouts are the **Takou** of Meade, **Taco** of Sir Geo. Simpson, but are not identical with the "**Tahko tribes**," so-called, of the interior, though often confounded with them. The locality is **Tacou Harbor** of United States Hydrographic Office Chart No. 225, edition of 1880.

‡Vol. i, p. 213 *et seq.*

§The distance of Grand Island on this view is evidently inaccurately stated, since it does not agree with the chart.

sided, rather bare above and wooded at the base of the bluffs. The Russian track passes eastward from it, but there is no report of obstructions on either side of it. It seems to have been named by Meade in 1869.

Taku Inlet.

From Grand Island **NW.** by **N.** ½ **N.** about seven miles is the entrance of Taku Inlet.* This inlet extends about eighteen miles in a **N.** by **W.** ¾ **W.** general direction, disregarding some minor curves, with an average width of about two miles except at its head, where it expands into a rounded basin nearly five miles in diameter, which receives the river of the same name.

Vancouver thus describes Taku Inlet: "From its entrance it extended **N.** 11° **E.** (true) about thirteen miles, where the shores spread to the east and west and formed a bason about a league broad, and two leagues across in a **NW.** and **SE.** (true) direction, with a small island lying nearly at its north-east extremity. From the shores of this bason (August, 1794) a compact body of ice extended some distance nearly all round; and the adjacent region was composed of a close connected continuation of the lofty range of frozen mountains, whose sides, almost perpendicular, were formed entirely of rock, excepting close to the water side, where a few scattered dwarf pine trees found sufficient soil to vegetate in; above these the mountains were wrapped in undissolving frost and snow. From the rugged gullies in their sides were projected immense bodies of ice (glaciers) that reached perpendicularly to the surface of the water in the basin, which admitted of no landing place for the boats, but exhibited as dreary and inhospitable an aspect as the imagination can possibly suggest." [Vancouver, vol. III, p. 278.] *Two glaciers in inlet*

In entering the inlet the great quantity of floating ice, *débris* from these glaciers, so retarded Whidbey's boats that "a passage was with difficulty effected" in the teeth of a strong northerly wind. They returned along the eastern shore, which appeared to be "a continuation of the same range of lofty mountains rising abruptly from the water side." The rise and fall of the tide appeared to them "upwards of eighteen feet;" Tebienkoff also calls it eighteen feet. The name of **River Islet** is applied by Meade to the solitary islet noticed by Vancouver, whose account, apparently quoted from Whidbey's reports, seems somewhat overdrawn, as subsequent visitors have not encountered such serious obstacles. A more or less constant trade is carried on with the interior Indians by the inlet and river, which could hardly be the case if the ice was as permanent an obstacle as would be supposed from Whidbey's experience. Into the northern angle of the basin above described the **Taku River**† enters from the northeastward. At a distance of some forty-five miles from the coast it receives a branch called the **South Fork of the Taku**, which has its source in **Lake Kennicott**, a small sheet of water some fifty or sixty miles **E SE.** from the junction of the South Fork and the Taku and close to the headwaters of the First North Fork of the Stikine. Not many miles from this locality **Lake Ketchum**, another small lake, gives rise to a somewhat shorter stream, which has been called the **Etsacuya** or **Etsakuga**. This, flowing parallel with the South Fork and separated from it by a high range known as the Bald Mountains, joins the Taku some ten miles north of the mouth of the South Fork. At the same point the **North Fork of the Taku** coalesces with the Etsakuga to form the Taku proper. The North Fork enters the junction from the **N NW.**, its headwaters spreading to the **NE.** and **N.** One of its affluents heads in a small spring or pool less than a mile from a stream which feeds Vatchee Lake and the Hotalinga River of the Yukon watershed, which enters the ocean nearly a thousand miles in a direct line from the mouth of the Taku. The South Fork and Etsakuga flow through valleys of which the second is said to be rather wide and fertile. All these branches were roughly explored in 1865–'66–'67 by parties of the Western Union Telegraph Expedition in search of a telegraph route toward the Yukon valley. All the details are therefore merely approximative. In regard to the character of the main stream of the Taku, according to Douglas, of the Hudson Bay Company, who ascended it for thirty-five miles, it pursues "a serpentine course between stupendous mountains, which, with the exception of a few points of alluvial soil, rise abruptly from the water's edge" and are largely snow covered. The current is reported to be very swift, but with regard to the depth of water in the river nothing is known. The same may be said of the inlet, where no soundings appear to have been taken.

The western headland of Taku Inlet was named by Vancouver **Point Salisbury**, but on his chart XII the name was transferred to the western angle of the same peninsula, about three miles **SW.** by **W.** from the point originally so named. On chart XIV the name is indicated in its correct place, and Tebienkoff has also followed Vancouver's text and intention on his chart (VIII) of the vicinity. All other charts except those of Tebienkoff have followed the inaccurate chart XII of Vancouver's Atlas, and thus the name and location of Point Salisbury have become fixed in geographical literature. Regarding practical uniformity as much more important than mere priority, the point which Vancouver intended to bear the name of Bishop Salisbury will here be considered, by authority of the Superin-

*The **Taco Gulf** of Sir George Simpson, in 1841; **Icy Arm (Lohtianoi)** of Tebienkoff, (Chart VIII;) mistranslated **Glacier Arm** by some authorities, and the **Takou Inlet** of Meade.

†This river should not be confounded with that sometimes called the **Tahko**, of the interior, otherwise the **Hotalinga**—a feeder of the Lewis and Yukon rivers. The headquarters of the two are separated by less than a mile of watershed.

tendent of the U. S. Coast Survey, under the name of **Bishop Point**. It is high and wooded, situated in latitude **58° 10′ N.** (approximate), and has **W SW.** from and immediately adjacent to it a cove which, according to Meade, affords anchorage. On the shore of this cove is a large native settlement of the Taku tribe of T'linkits. While Bishop Point forms the western point of entrance to Taku Inlet there does not seem from the charts to be any point especially recognizable as an eastern headland.

About **SW. ¾ W.** three miles from Bishop Point lies **Point Salisbury** of the great majority of charts, forming a somewhat conspicuous projection of the shore, whose approximate position is

Latitude ..... **58° 10′ N.**
Longitude ..... **134° 12′ W.**

and immediately opposite which, on the southern shore, **SE. ½ S.** between one and three miles from Point Salisbury, lies **Point Arden** of Vancouver, a broad projection of Admiralty Island, which is not specially remarkable so far as known.

According to Meade the two points so approach each other as to contract the width of Stephens Passage between the **NW.** angle of Point Arden and Point Salisbury to little more than a mile. But Vancouver and others indicate no such contraction, but, on the contrary, a width of not less than two miles in this vicinity. A very short distance west from these narrows Stephens Passage is divided by **Douglas Island**, named by Vancouver, and consisting of an extensive and rugged tract of land twenty miles long **E.** and **W.** and about five miles broad. It is somewhat spindle-shaped, tapering to a point at each end, the eastern extremity terminating sharply in **Tantallon Point**,* from which Point Salisbury bears **NE.** by **E.** ¼ **E.** between one and two miles. ~~About equidistant from both promontories, in the middle of the entrance, lies **Marmion Islet**,* about half a mile in extent.~~

From this the channel separating Douglas Island and the main, which was named **Gastineau Channel**,† extends in a **W NW.** direction about ~~ten~~ miles to a point where a small islet is situated, visible from both entrances of the channel, whence the direction of the passage is **W SW.** about eleven miles to the western entrance. The width of the channel varies from less than a mile to a mile and a half, and at the western entrance there is an islet just within and another just without the passage.

Gastineau Channel was found by Vancouver's party to be rendered impassable by floating ice from the glaciers in the vicinity, which descended from the mountains of the mainland to the sea. No one else appears to have examined the passage until about 1880, when it was visited by prospectors, who found evidences of mineral veins and placers on Douglas Island and on the mainland, and returned to Sitka in October of that year and reported their discoveries. The result was that in January and February, 1881, a mining camp was established on Gastineau Channel which has reached at present date the proportions of a good-sized town, which is known as **Juneau**, after one of the original prospectors of the district.‡ The harbor of Juneau is formed by the shores of Douglas Island on the south, the mainland on the north, and *shoals* which extend clear across the passage on the west, leaving a water way ~~said, at low water, to be~~ practicable only for boats.

The passage leading to Juneau from Stephens Passage, that is, the eastern half of Gastineau Channel, has not been reported upon, but is practicable for steamers, which now leave there (1883) a monthly mail.

The harbor itself is about three-eighths of a mile in extent, extending somewhat farther to the east and west, and has an average depth of about nineteen fathoms with a bottom of sticky mud. The tide ranges about eighteen feet. A wharf has been built which is believed to be in about

Latitude ..... **58° 16′ N.**
Longitude ..... **134° 20′ W.**

The variation of the compass is about **30°** easterly.

Up to the wharf the northern shore is bold-to, but **S.** by **E.** ½ **E.** from the end of the wharf on the Douglas Island shore, at the mouth of a stream, a spit makes out, dry at low water, nearly a quarter of a mile in a northerly direction. Westward from the wharf and **NW.** by **N.** ½ **N.** from the spit is **Miner's Cove**, a small indentation, mostly dry at low water, the western point of which is formed by

* Named by the U. S. Coast Survey.

† By Homfray, in 1867, on manuscript charts furnished the Western Union Telegraph Expedition. The name was adopted by the U. S. Coast Survey on its charts in 1879, by the U. S. Hydrographic Bureau of the Navy Department in 1880, and on the British Admiralty charts a few months later. It appears to have been derived from one of the Hudson Bay Company's vessels which traded on the coast and which was named after the **Gastineau** or **Gâtineau River** of Quebec, a branch of the Ottawa. It has also been called **Carroll Straits** and **Icy Channel**.

‡ It has been stated that the partners in the work of prospecting were named Harris and Juneau, and originally the camp was named **Harrisburg** and the mining district the **Juneau district**, in commemoration of the discoverers. The U. S. Navy established a small force here and made a reconnaissance of the harbor which was by them named **Rockwell**, after one of the naval officers engaged on duty there. The double names occasioning trouble, especially in postal matters, the residents held (so it is stated) a town meeting at which the name of **Juneau** or **Juneau City** was adopted for the settlement and afterward accepted by the Post Office Department.

a hill some two hundred feet high. Behind the cove and along the shore toward and beyond the wharf is situated the town of Juneau on a narrow strip between very steep mountains and the water. Westward from the town is a deep ravine in the mountains, through which runs **Gold Creek**, bringing down sediment which has formed the shoals which have closed this part of the channel to large vessels. The sides of the mountains are steep and more or less wooded. The opposite shore of Douglas Island is less elevated but densely wooded.

The population of the town is now (1883) stated at several hundreds. It is a post office and a stopping place for the monthly steamers. In 1881 the express companies reported the shipment of $150,000 in gold from the mines of the Juneau district and, in 1882, about $250,000 was sent down in this way besides what might have been carried by private hands. The mineral veins are said to be auriferous quartz carrying much pyrite and galena; the rocks are of a slaty character; the mines extend over a region two miles wide, six or eight miles long and 1,500 to 2,000 feet above the sea, their distance from the town being four to eight miles. Little or nothing of a precise character has been put on record as to this vicinity either in hydrography or geography.

The western part of Gastineau Channel is ~~little known~~.

No directions for the navigation of the channel can be given, and none appear to be needed for Juneau Harbor.

A sketch of this harbor, from a reconnaissance made in 1881 by the officers of the U. S. S. *Wachusett*, Commander Henry Glass, U. S. N., commanding, was published by the U. S. Coast Survey in 1883 as No. 737 of its preliminary Harbor Charts of Alaska.

Southward from Douglas Island Stephens Passage is wider and more commodious. From the vicinity of Point Arden, in mid-channel, the passage extends sixteen and a half miles **W.** by **S.** ¼ **S.** with an average width of more than two miles.

Four or five miles westward from Point Arden an opening makes into the shore of Admiralty Island which is continued southeastward toward the head of Seymour Canal, with which it is said to join. One of the missionaries is said to have passed through it in a canoe and no mention was made of any portage. But further and more explicit information is needed before it can be said with confidence that a water-way exists here.

The southern shore of Douglas Island is rather irregular, with numerous small points and coves. The opposite shore of the Admiralty Group is described by Vancouver as moderately elevated and producing an uninterrupted forest of very fine timber trees, chiefly pines. From Point Arden about seven and a half miles **SW.** ½ **W.**, according to Meade, a stream falls into the passage from the **SE.**, at whose mouth is a native settlement. **W SW.** about fourteen miles from Point Arden is **Auke Bay**, named by Meade in 1869. No sketch of it has been published. It is a small harbor exposed to northerly winds which send in quite a heavy sea, and affords anchorage in about ten fathoms, muddy bottom, one mile from the small stockaded village of Auke Indians located here. The bottom rises quite abruptly from ten to five fathoms and less, beyond which is a mud flat; the holding-ground is good. Each head of the harbor is rocky.

A mile or two westward from Auke Bay is **Point Young**, named by Vancouver, and forming the eastern point of entrance of **Young Bay**, about three miles in length **W NW.** and **E SE.** and a mile in width. At the head of this bay an islet or rock exists, and another rock was noticed by Vancouver in the entrance of the cove, together with an islet, called by Meade **Scull Islet**, of small extent. No details appear anywhere in regard to Young Bay, although it has the aspect of a harbor. Hence westward, it is understood that the Indians make a portage two or three miles in length to the head of a deep bay which makes in to the eastward from the vicinity of Game Cove north of Point Marsden. From Scull Island the shore curves more and more toward the north, terminating in that direction at **Barlow Point, W.** by **N.** ½ **N.** thirteen miles from Point Young. This projection, off which are some small rocky islets, forms the eastern point of entrance of **Barlow Cove**, named by Whidbey, and in which anchorage may be obtained. He remarks that it forms a "very snug harbor, of good access by the passage round to the north of Point Retreat." From the indications on the general charts it would appear that this cove is three or four miles long **NW.** and **SE.** and about half as wide. It is ~~of some~~ what ~~triangular~~ shape, ~~widest at the entrance~~, and ~~terminating in a rather acute point at the head~~. It was used as an anchorage by the Russians, and the U. S. Coast Survey of 1867 obtained anchorage in sixteen fathoms, muddy bottom, near the head of the cove. The shores are low, well wooded, and composed of mica schists dipping vertically, cut by large quartz veins containing iron pyrites.

SE. from this vicinity the land rises to rather elevated hills, on which, about the peaks, snow apparently lingers through the summer. The western extreme of the cove extends in a northwesterly direction as a narrow promontory, named by Vancouver **Point Retreat**, and by the Russians **Otstuplenia**, which forms the **NW.** point of entrance to Stephens Passage. From its western angle *Retreat Reef* extends half a mile in a westerly direction.

It appears to be moderately elevated, with rocky shores, covered with trees. Its approximate position is

Latitude ..... **58° 23′.5 N.**
Longitude ..... **135° 01′.5 W.**

The land for some six or eight miles southeastward from it was found by the U. S. Coast Survey to be low, heavily wooded and nearly level, with a terraced appearance near the point.

The southern shore of Douglas Island from opposite Scull Island is irregular and offers many points and coves of which nothing is known. It also approaches at one point within about a mile of the Admiralty Island shore, rapidly receding again to the northwest with several indentations to **Outer Point**, named by the U. S. Navy, which is the westernmost extreme of Douglas Island, high, rocky and well wooded. It forms the southwestern angle of the land which here curves in to form what has been named by the U. S. Navy Fritz Cove, of which the other boundary is formed by **Entrance Point** in approximate

Fritz Cove.

Latitude	**58° 19′ N.**
Longitude	**134° 47′ W.**

The variation of the compass is about 30° easterly.

Entrance Point is low, flat and narrow, with a marsh behind it and a wooded rocky nub seventy-five feet high at its extremity. The anchorage is included in the indentation between a line **S.** by **E.** from Entrance Point and the receding shore of Douglas Island. There appears to be room for only one vessel. The land to the southward and westward of the anchorage is high and rises from the low part of Entrance Point gradually westward to an altitude of some fifteen hundred feet, well wooded.

The extent of the available anchorage is about a cable, with a bottom of sticky mud, affording good holding-ground. The rise and fall of tide observed was fourteen feet, but it is supposed to reach eighteen feet at springs.

The following sailing directions are arranged from the report of Lieutenant Symonds:

DIRECTIONS FOR THE USE OF FRITZ COVE.

In approaching the cove keep at least half a cable from the shore, and when opposite the middle of the cove a course may be taken **S SE.** until twelve fathoms are reached, which is the anchorage.

Entrance Point should not be approached nearer than two cables when intending to anchor.

This anchorage was formerly used by the Hudson Bay Company's vessels.

N NW. three cables from Entrance Point is **Hut Point**, where there is an Indian fishing village, and which forms the southern point of entrance to the western part of Gastineau Channel.

Fritz Cove has been represented as a sub-sketch on U. S. Hydrographic Office Chart No. 883 of 1881, and, on a larger scale with some additions, on U. S. Coast Survey Harbor Chart No. 736 of 1883.

The reconnaissance was made by Lieut. F. M. Symonds, U. S. N., of the U. S. S. *Wachusett*, Commander Henry Glass, U. S. N., commanding, in 1881.

It is proper to call attention to the fact that, both on the manuscript chart of the additions furnished to this office on U. S. Hydrographic Office Chart No. 883 and on the revised edition of U. S. Hydrographic Office Chart No. 225, a small islet is laid down directly off the middle of Fritz Cove, apparently about half a mile from the shore and nearly midway between Outer and Entrance points. This islet does not appear on U. S. Hydrographic Chart No. 883 on the sub-sketch of Fritz Cove, but only on the general sketch of Lynn Canal, nor is it represented on U. S. Coast Survey Harbor Chart No. 736, derived from the same data as the above-mentioned sub-sketch.

About **NW.** from Hut Point, apparently about half a mile, lies **Spuhn Point,*** the southwestern extreme of **Spuhn Island**, which is separated from the main land by a narrow and obstructed passage, probably not navigable. Spuhn Point may be considered as forming the northern point of entrance to the western part of Gastineau Channel. It is bold-to and about a mile eastward; within the entrance is a narrow island about a mile in length, lying about in the middle of the channel.

The northern limitation on the main land side of Stephens Passage is a point named by the U. S. Coast Survey **Point Stephens**, which bears from Point Retreat about **NE.** by **N.** ½ **N.** four and a half miles. Midway between the two points, dividing the strait into two halves, is the western end of Shelter Island, named by Meade in 1869. It is about five miles long **E SE.** and **W NW.**, and nowhere equals a mile in width. From the middle of its western end a *reef* extends half a mile in the same direction, while a *sunken rock* is indicated by the U. S. Navy about three cables **SW.** from the **SW.** angle of the western end of the island.

From the western angle of Point Retreat the *Retreat Reef* extends nearly half a mile in a northerly and westerly direction and is generally visible to one-third of a mile. The point should not be approached nearer than half a mile. The rocks off Barlow Point are dry and visible. Southeastward from Barlow Point is another, called **Symonds Point**, with what looks like an island but is really a peninsula at its end. It is free from dangers.

Three quarters of a mile westward from the eastern end of Shelter Island, south of that island, is a *dangerous reef*, covered at high water and extending well out into the channel. *Family reef buoy on it*

*Named by the United States Navy in 1881.

This is a high water Isl. between George's Rock + Douglas Isl 1½ miles an anchorage apparently inside? Is it Fritz Cove

About a mile **E SE.** from Symonds Point and nearly midway between Fritz Cove and Shelter Island is **Portland Island**, named by the U. S. Navy, off the northern shore of which, as well as its southeastern shore, *reefs* extend a third of a mile, mostly visible. Midway between Portland Island and Fritz Cove is the sunken *George Rock*.

From Spuhn Island to Point Stephens the shore of the mainland presents a series of projecting points with bays between them in which are several islets, rocks and shoals. A mile and a half westward from Spuhn Point is **Point Louisa**, named by the U. S. Navy, having a narrow island at its eastern side and three or four more small islets or rocks between it and Spuhn Island. ~~Two and a third~~ miles westward from Point Louisa is **Point Lena**. There are several small islets near the head of the intervening bight. About a mile and a half **W NW.** from Point Lena is **Aaron Island**, with two islets beyond it in the same trend, and a *sunken rock* eastward from it about midway between it and the point. A glacier comes down near the head of the bight between Point Lena and Point Stephens.

The passage between Shelter Island on the south and the above-named points and islands on the north has been called **Favorite Channel** by the U. S. Navy, and is reported to be clear and unmistakable. After passing Point Louisa from the northward; keep the northern shore well aboard until up with Spuhn Point to avoid *George Rock*.

The passage between Shelter and Admiralty Islands was named **Saginaw Channel** by Meade, who passed through it in 1869. The only hidden danger known in this passage is the *sunken rock* close to the shore of Shelter Island, three-quarters of a mile westward from the eastern end of the island.

In going through this passage from the northwest, after passing the rocks off Barlow Point, Symonds Point will be observed to extend well to the eastward, and covering what appears to be the **SW.** end of an island close in to that point. This is, however, really a portion of the point itself. Keep Symonds Point well aboard until past the sunken rock above mentioned, when the channel is clear. Between Shelter and Portland Islands Tebienkoff indicates *continuous foul ground*.

Before taking up Lynn Canal it will be necessary to consider that portion of Chatham Strait northward from Point Gardner.

POINT GARDNER TO POINT MARSDEN.

For data relating to this part of Chatham Strait the reconnaissance sketches and reports of officers of the U. S. Navy will here be chiefly relied upon. From Point Gardner the eastern shore of Chatham Strait extends in a general way **NW.** by **N.** about ten miles—uniformly bold, indented by a number of small bays, backed by comparatively high and wooded land—to **Point Caution**, named by Meade, and forming the southern point of entrance to a large bay affording anchorage and named by the U. S. Navy Whitewater Bay.* In approaching it is recommended to give the shore of Admiralty Island a berth of two miles, as it is reported foul and contains *numerous outlying rocks*, some of them only visible at extreme low water.

Whitewater Bay.

Whitewater Bay extends about three miles in an **E.** by **S.** and **W.** by **N.** direction with an average width of a mile. Its northern point of entrance was called **Woody Point**† by the U. S. Navy, and is about a mile and a half northward from Point Caution. Off the entrance to the bay, less than a mile (according to Tebienkoff, who represents the entrance as 2½ miles wide) **SW.** from Woody Point, and directly in front of the entrance according to others (while some charts omit it entirely), is *Russian Reef*, named by Meade, upon which a Russian vessel is said to have struck.

According to Meade, who has given the only published (but not very clear) description of it, if a line were drawn from Point Caution to Woody Point the reef would be nearly a mile outside of that line, but the position which he adopts for it on the old edition of British Admiralty Chart No. 2431 would make the distance less. He says‡ "it is close to the land, and consists of clevenr very ugly rocks extending about **NW.** and **SE.** along the land for two miles. The distance this reef is from the eastern shore of Chatham Strait is about two and a half miles, being right opposite a bight." The notes accompanying the reconnaissance of the bay by officers of the U. S. Navy in 1881, relating to its approaches, make no reference to Russian Reef, between which and the shore the *Saginaw* found no bottom in many places at ninety fathoms.

Point Caution, from this reconnaissance, appears to have a narrow rocky tongue extending in a **N NW.** direction a quarter of a mile while only a few fathoms wide. Similar but smaller tongues extend from projections of the northern shore opposite. From the extremity of this tongue **E.** by **S.** ½ **S.** is **Flag Point**, named by the Navy, bluff, rocky and wooded, placed by them in approximate

Latitude	**57° 13′ N.**
Longitude	**134° 30′ W.**

* Also called **Lower Koutsnow** or **Khudanu**, locally.

† In SE Alaska all points are woody, and about one-third of them have been named so, to the great confusion of hydrographers. It is to be hoped that the name will never be employed again.

‡ U. S. Hydrographic Notice No. 13, 1869, page 20.

Variation of the compass is about 28° 30′ easterly. Rise and fall of tide about sixteen feet.

Two and a quarter cables **N NW.** from Flag Point is **Healy Rock**, a small black rocky islet, surrounded by *foul ground* to a cable distant, mostly marked by kelp, at least in summer. Three-quarters of a mile eastward from Flag Point is a smaller rock, dry, with three fathoms half a cable from it in all directions.

Close to the shore on the northern side of the bay, **N. ¾ E.** from the above-mentioned rock, is **North Island**, of small extent. Eastward from a line joining the two, especially in a **NE.** direction, the bottom is rocky and irregular; there are *shoals* and kelp patches and very likely *hidden dangers*. A stream empties into a rounded cove in the **NE.** corner, where salmon are caught in summer. There is a fishing camp or house here, but the village is nearly a mile eastward from the north head of the bay, on the northern shore, off which appears to be deep water.

From the above-mentioned reconnaissance this bay does not appear to offer many attractions. The following directions are derived from the notes of the naval party.

DIRECTIONS FOR ENTERING WHITEWATER BAY.

Open Whitewater Bay well, and a course **E. ¾ S.** midway between all visible dangers, with a sugar-loaf mountain on Baranoff Island directly astern, will lead in clear. After passing Healy Rock keep the northern shore aboard, sound as you go, and anchor when fourteen fathoms are obtained, with North Island **N.** by **E.** five or six hundred yards.

All heavy winds draw up or down Chatham Strait, and hence need not be feared in the bay.

A few miles farther northwestward is **Rocky Point** of Meade, with several visible rocks near it. At the northern part of the bay of which Rocky Point is the southern headland is **Letushkwin**, sometimes called **Old Kootznahoo** (**Khudsnu**), formerly a very populous T'linkit village.

Westward, a mile from this village, is **Village Point** of Meade, in 1869, with an islet off it and from which **Distant Point** of Meade, a mile or two **NW.**, is separated by a narrow deep cove. Distant Point is situated twenty-two miles **NW.** by **N.** from Point Gardner. At its western angle are some visible rocks and a couple of islets. This point forms the southern headland of **Hood Bay**, named by Vancouver, but by no means corresponding to Whidbey's description, if Meade's chart be trustworthy. According to the latter the bay extends **E.** by **N. ½ N.** and **W.** by **S. ½ S.** about six miles with a width not exceeding three miles, its northwestern extreme being formed by Kenasnow Island.

The original compass of the term included the waters northwest of Kenasnow Island as far as Point Samuel, which have received other names on Meade's chart. The inner eastern extreme of Hood Bay bears the name of **Chaqua Bay**, a native name.* No details are at hand in regard to soundings, anchorages or shelter, in this locality.

There are several islets in Hood Bay, one named **Table Island**, of small extent, which appears to be cut in two in a **N NW.** and **S SE.** direction, lies off the southern entrance of the passage between the eastern end of Kenasnow Island and the main shore. This islet is distant a mile and a quarter about **S.** by **W. ½ W.** from a high promontory of the main shore, named by Meade **Bold Cliff**, and on this line between the two is *Lone Rock*, in the channel, bare at low water, covered at a quarter flood and having nine feet of water on it at extreme high water. There is a clear passage nearly two cables wide either side of this rock. Midway between it and the shore is another dry rock, not named. Between the **NW.** end of Table Island and the **SE.** shore of Kenasnow Island there is an apparently clear passage two cables wide. The straits between Kenasnow and the main are indicated in general as clear. They are about six miles in total extent and somewhat less than one-third of a mile wide in the narrowest part.

Kenasnow† Island, so named by Meade, forms a part of the northern shore of Hood Bay, and its western extremity is the **NW.** point of entrance of that bay. The island is somewhat irregularly crescent-shaped, with the convexity southward, and is about three and three-quarters miles long **E.** and **W.** and about a mile broad. The western end is prolonged in a **NW.** direction as *Kenasnow Reef*, three-quarters of a mile long and dry at low water. The eastern end curves to the **N NE.** with a *short reef* a cable or two in length, forming **Shelter Point**, a mile west from which **Hood Point** projects from the northern shore of the island about the same distance. The shore between them is rocky.

The waters between the northern shore of Kenasnow Island and the main Admiralty shore, formerly included in Hood Bay by Vancouver and others, were named by Meade **Kootznahoo Roads**, a spelling which is here adopted because published by the original explorer, and certainly better than a

* Mentioned in the voyage of the *Eliza*, in 1799, as **Chaqua Cove**. It is also **Chaque Bay**, erroneously, on some charts.

† Corrupted from **Ken-as-n'hu**, an Indian word, meaning "near the fort," referring to the native fortified place **Khuts-n'hu** (otherwise **Kootznahoo, Kootsnu, Hoochinoo**, etc.), meaning "**Bear Fort**," near by on the shore of the main Admiralty Island. This island was called **Sheetkah Island** by the traders in 1799, who refer to the village as **Hootsenhoo**. At present there is quite a village still remaining.

large proportion of the forms which have been used to denote the same Indian name* (phonetically Khutz-n'hu). The roads comprise a body of water three miles long **E.** and **W.** and about two miles in greatest width, surrounded chiefly by bold and rocky shores. The southern point of entrance is formed by *Kenasnow Reef;* the northwestern by **Danger Point** of Meade, a rounded, bold, rocky, densely wooded promontory about five hundred feet high, from which toward the **W NW.** a reef somewhat less than a mile in length extends. The south and southeast shores of the point appear to be tolerably clear and bold-to. Eastward the ground becomes lower and more level, and at a distance of somewhat over a mile eastward from the end of Danger Point is the large native settlement of Kootznahoo, containing about sixty houses, each of which may lodge a number of families.† In front of the village the shore is bold-to, carrying five to seven fathoms close in; anchorage may be had here. West from this there is a narrow rocky border to the shore. East from the village large *reef platforms* fringe the shore with a width of one to three cables, dry at low water. The coast, which trends to the eastward from Danger Point to the vicinity of the village, then curves for a mile and a half **SE.** and **E SE.**, forming a bight whose southeastern extremity has been called by Meade **Saginaw Point** from which rocks extend seaward two cables or more. Between this point and Danger Point across the entrance to the bight stretches a shoal known as the *Kootznahoo Rocks.* This is a mile and a quarter in length **W.** by **N.** ½ **N.** and **E.** by **S.** ½ **S.** and about a third of a mile wide, dry or awash at low water. It approaches so near by its northern edge to Saginaw Point as to leave no advisable passage for vessels, but the western end and northwestern edge are separated by not less than a third of a mile from the shore, forming a snug and secure but contracted anchorage in front of the village with from twelve to twenty fathoms of water. In this vicinity, according to Meade, the tide rises twelve feet, and it is **H. W. F.** and **C.** at $0^h\ 20^m$.

The flood tide is said to run four hours and a half, the ebb seven hours, and there is half an hour of slack water. The geographical position of Danger Point, from Meade's observations, is

Latitude	**57° 29′ N.**
Longitude	**134° 37′ W.**

and the variation of the compass about twenty-nine degrees easterly in 1869.

Half a mile eastward from Saginaw Point it was proposed to erect a United States military post near a break in the rocky barrier of the shore. Half a mile farther east at Bluff Point, the shore suddenly recedes northward about half a mile to the mouth of **Koteosok Creek,** a stream emptying into a lagoon of considerable size. Within the lagoon, about a mile northward from the mouth of the creek, ten fathoms have been obtained. Between Bluff Point and Hood Point, the narrow eastern termination of Kootznahoo Roads, the clear channel is only a quarter of a mile wide with four or five fathoms water, Meade's chart being in error on this point. In the main channel of the roads fifteen or twenty fathoms may be had. At their eastern extremity the above-mentioned narrow passage leads into **Koteosok Harbor** of Meade, which, according to U. S. Hydrographic Office Chart No. 882, is wider and more commodious than indicated on Meade's chart of 1869. This harbor connects with Hood Bay by the passage between Shelter Point and Bold Cliff, previously referred to. This harbor is rounded in form with a diameter clear of obstructions of three-quarters of a mile, and affords anchorage in ten or fifteen fathoms, soft bottom. At the head of the bight between Hood and Shelter points is the establishment of the Western Fur and Trading Company.

Several sketches of this locality have appeared; the best and least incorrect is that on U. S. Hydrographic Office Chart No. 882 of 1881.

On the western shore of Chatham Strait, about **W.** by **N.** ¼ **N.** from Point Gardner, the charts indicate a projection of the Baranoff shore with a cove northwest of it, in regard to which there is no further information. Thence the coast is mapped as compact, without notable indentations, and extending in a direction about **NW.** by **W.** an uncertain distance‡ to the southeastern point of **Kelp Bay,** named by the U. S. Coast Survey, a large unsurveyed bay,§ of which the head extended in a west-northwesterly direction toward the inlets previously referred to (pages 166–7) as extending in a southeasterly direction from the southern border of Peril Strait. Tebienkoff is the only one who gives any details in regard to this bay and he indicates (Chart VIII, 1849) the upper part of it as unexplored. He

* It has been rendered **Hoochinoo, Hudsunoo, Houchnou, Kootsnoo, Kutznou, Koutsnou, Koutsnow, Hoosnoff,** &c.

† This village can be distinctly seen from the **NE.** point of entrance to Peril Strait and is supposed to be as large or larger than the Indian village at Sitka. In 1882 it was shelled and partly destroyed by the U. S. steamer *Corwin* on account of unruly demonstrations by the natives against the employés of the trading station, cannery, &c., on Kenasnow Island. The lives of some of them were threatened, on account of the accidental death of a native in the company's employ, in accordance with Indian law. There are no totem poles at this village. Potatoes have been cultivated here by the Indians for many years—each year more or less are sold to the whites. They preserve their own seed potatoes but substitute new ones when they can. All the land in the immediate vicinity is low.

‡ Eleven miles according to Tebienkoff, but the naval report on Whitewater Bay, which is about five miles farther south, speaks of it as opposite Kelp Bay. There are no means of settling the question at hand.

§ Referred to on various charts as a "deep inlet" or bay, but not named. There are two other deep bays in close proximity.

represents the entrance as about two miles wide. Off the northern point a cluster of rocks projects half a mile eastward into Chatham Strait. On the southern shore within the bay are four or more islets. The northern shore is much indented. According to Tebienkoff the bay extends inland about six miles to a two and a half mile portage. Hence to Point Thatcher the shore trends in a northwesterly direction with several coves and a good many rocks along shore and especially off the projecting points between the various indentations. It should not be approached within half a mile.

Returning to the eastern shore of Chatham Strait, in coming eastward through Peril Strait, that part of the Admiralty Group opposite the eastern entrance of the strait appears as a low wooded plain of great extent, behind which may be seen in favorable weather the high snow-capped mountains of the main and the elevated hills of the eastern portion of the group itself. This plain is the seat of an extensive network of inland waters not yet fully explored, and which, from the observations of the U. S. Navy, appear to wash the shores of islands and ramifying inlets which are the seat of extensive coal fields. To the whole of the Admiralty Group Tebienkoff applies the name **Khuts-na-ū**, and to the interior system of canals above mentioned Meade has applied the term **Kootznahoo Archipelago**, but of this only a small portion has yet been explored by him, to which he has given the name of **Kootznahoo Inlet**. It has also been referred to under the name of **Kootznahoo Inlet.** Mud Bay. The southern point of entrance to this inlet is Danger Point, and the northern is called by Meade **Kootznahoo Head**, a high, rounded densely wooded dome, reaching an altitude of eight hundred feet and forming a low bluff or steep bank near the water's edge. From the western extremity of Danger Point the apex of the head bears **N.** ½ **E.** a mile and a quarter, but the channel between the northern edge of the point and the southern edge of the head, forming the entrance to the inlet, is only four cables wide. A view of the entrance, of the Head, and of Danger Point, is given on U. S. Hydrographic Chart No. 225.

From its narrowness, tortuosity and numerous unexplored ramifications, the inlet can be described but poorly at best. The best guide is the chart, a glance at which will show that with the navigation of these channels a sailing vessel can have nothing to do. Their only importance at present is as a most promising point for the hydrographic and mining explorers, the presence of a navigable channel for steamers and of good coal here being ascertained facts.

The general course of the explored part of the inlet is eastward and northeastward for some three miles, then northerly about six miles, when it again curves to the eastward for several miles and throws out a number of arms; beyond which it is unknown.

In mid-channel at the entrance ten to fifteen fathoms may be had. Two miles eastward within the entrance the depth diminishes to six or seven and the inlet curves to the northward. On the southeast side is a long narrow islet, Village Rock, connected with the southern shore by *a shoal* where there is an overfall at certain stages of the tide. From **Turn Point**, which is on the western shore, half a mile northward from Village Rock, there extend certain *rocks directly transverse to the channel* and two-thirds of the way across it. There are four or five fathoms in the cable wide passage between these rocks and the **SE.** shore. About the rocks the strong tidal currents produce a *race and ripples* which have secured from Meade for this place the expressive name of "**Hell's Acre.**"

E NE. from this two unexplored channels open with *some ripples* at their common entrance; the current in this vicinity sometimes runs at a rate of eight or ten knots. The explored channel is the most western of the three, and is separated from the others by **Channel Point**, south from whose end *a reef* extends nearly half a mile. A mile or so northward from this is the **Stillwater Anchorage**, in twenty fathoms, both shores clear of rocks. A mile and a quarter northward the channel is again obstructed by numerous visible rocks, forming a strong ripple. To the westward is **False Channel Bay**, of small extent, marked at its northern extreme by **Point Pillsbury**. Eastward and opposite is an unexplored opening. In mid-channel between the rocks eight or ten fathoms are had. Thence the trend of the channel is **N.** by **E.** ½ **E.**, and it is narrowed to about a seventh of a mile in the clear, with a depth of six to ten fathoms. A mile and a half northward from Point Pillsbury, on the western side of the passage, is **Point Bridge**, abreast of which *a race* occurs. (Beyond this the southern and eastern shore becomes much broken into islands, and in the course of three or four miles the names of **Long Island, Termination Point, Cedar** and **South points** occur on the southeastern shore, and **Hemlock** and **North points** on the northwestern shore, details not sufficiently important to warrant particular description and for which the navigator is referred to the chart.)

Northeastward thence is an expansion or bay which has received the name of **Mitchell Bay**, the southern bounds of which are formed by Woodchopper Island, whose north shore is fringed with formidable rock platforms or reefs half a mile in width, called *Saginaw Ledge*. Unexplored openings pass north, east and south, and anchorage appears possible almost anywhere. At or near the **NE.** extreme of Woodchopper Island "a mine of the best bituminous coal yet found upon our Pacific coast" was opened by the U. S. S. *Saginaw* in 1868. Wood of course abounds; fish of all kinds are reported; abundant and fresh water may be found falling into Mitchell Bay from the northward. A canoe passage is said to exist between these waters and those of Seymour Canal, but as it frequently happens that natives in speaking of canoe passages do not distinguish between continuous water and a route interrupted only by a short and easy portage, it is doubtful whether a continuous passage exists even for canoes.

Point Samuel, named by Vancouver, and erroneously given as **Samuels Point** by Meade, is, according to the latter, situated two and a half miles **NW.** by **W.** $\frac{1}{2}$ **W.** from the southern extremity of Kootznahoo Head. From a study of Meade's and Vancouver's respective charts, though the whole conformation of the shore is in each differently represented, the identification of Point Samuel by Meade would seem to be erroneous. Vancouver's Point Samuel can hardly be other than the southern and western extreme of Kenasnow, which he apparently did not recognize as an island. If so, as a part of the mainland of the Admiralty Group, it would then form the northwest extreme of Hood Bay, and the openings represented on his chart between it and Point Parker are identifiable with Kootznahoo Roads and Inlet. But by the assumption that the roads form a part of Hood Bay, Russian and English cartographers have transferred the name to a point north of them, apparently the same as Kootznahoo Head, while Meade has shifted it still farther north to an inconspicuous projection which would hardly have attracted notice from Vancouver's parties and cannot be reconciled with the "projecting point" of his text and chart. Since, however, the features of the shore as indicated by Vancouver are merely approximate, and since the identification, whether correct or otherwise, has been made on the only chart of the locality which can claim even approximate accuracy, or exhibits any details, it is perhaps as well to leave the modern application of the old name undisturbed.

From Point Samuel as thus located, Point Craven is indicated as bearing **SW.** $\frac{1}{2}$ **S.** about nine and a half miles. Northwest from Point Craven, which forms its southwestern extreme, is **Sitkoh Bay**, unsurveyed, apparently four or five miles long in an **E.** and **W.** direction and half as wide. Upon Point Craven are some Indian houses constituting the T'linkit village of Sitkoh. It was to a stockade behind a steep detached rock in this vicinity, according to Lisianski, that the natives retreated after their defeat at Sitka by the Russians in 1804. This Indian fort was visited by Langsdorff in October, 1805.

Off Point Hayes, the northeastern extreme of the bay, are one wooded and two bare islets, and the *Morris reef*, previously described, which at extreme high water is nearly all covered. The shore north of it should not be closely approached. About three miles **NW.** $\frac{3}{4}$ **N.** from Point Hayes, not far from the shore, is a high conspicuous rocky islet, called **White (Bieloi) Rock** by Tebienkoff. On most charts it is placed too far north.

Tenakee Inlet.

Twelve or fifteen miles in a northerly direction from Point Hayes the coast of the Chichagoff group extends, more or less broken and with several unexplored openings, of which the most northerly is called by the Indians Kakagin, to **South Passage Point**,* which forms the southeastern extreme of **Tenakee Canal** or **Inlet**.†

Two islets lie near this point.

It may be noted here that, regarded with relation to Point Marsden, all this part of the Chichagoff Group bordering on Chatham Strait is farther west than the charts in common use indicate. It is probable that a large part of it, together with part of the Admiralty Group, is represented as several miles too far north and east. But until some continuous surveys have been made it is impossible to correct the charts.

The entrance bears about **SW.** $\frac{3}{4}$ **W.** six miles from Fishery Point, and the north head about **S. 11° E.** from the boat anchorage south of Point Marsden.

Tenakee Inlet is only known from verbal reports by Major M. P. Berry, of Sitka, and by natives who constantly traverse it. It has not been surveyed in any part. It is supposed to extend in a west-northwesterly direction to within five or six miles of Port Frederick, where it terminates at a portage of about one hundred and fifty paces in width at high water, which rises about fifteen feet above the sea. Half way toward the portage from Chatham Strait on the north shore are some hot springs, said to contain sulphur, near which is a native settlement.

Off this there are some islands in the inlet, and in the south shore there is an opening which trends toward Hooniah Sound, Peril Strait, from which it is separated by an isthmus of high land about five miles wide. The inlet is much used by the Indians living at Port Frederick in their journeys to the more southern part of the archipelago. Major Berry was the first or one of the first white men to pass through this inlet, which he did in an Indian canoe, and his sketch has been transferred to U. S. Hydrographic Office Chart No. 225, edition of 1882.

On the eastern side of Chatham Strait, about eight miles northward from White Rock, according to Vancouver, is a prominent low point composed of shingle, and named by Vancouver Point Parker. It is of triangular shape, with a kelp patch off its extreme end, and is supposed to be in about

Latitude	**57° 37′ N.**
Longitude	**134° 40′ W.**

Meade places it somewhat farther north, perhaps by an oversight in lettering the chart.

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*South Point of Meade's chart, first edition. Named by the U. S. Navy.

†This inlet has also been called **Blind Passage, Berry Passage**, and **Siwash Canal**. The name adopted was adopted by the U. S. Coast Survey in 1869, and is that applied to it by the natives who live upon it. It is accented on the last syllable.

Hereabouts, Vancouver's parties noted that the flood tide came from the southward, though it only ran about two hours.

The large opening which may be found on most charts, dividing into two branches as it enters, does not exist. The land is low thereabouts, and a salmon stream comes apparently from a lake into the strait, but there is no inlet or bay according to the latest authorities.

However, it is stated that about a league to the southward and eastward of Point Parker Vancouver's party found in one of these bays an opening an eighth of a mile wide, which has not subsequently been explored. At the entrance five fathoms water was obtained, but after advancing about half a mile it proved to be both shallow and rocky—a portion of its southern extreme being cut off at high water, forming an island. An Indian settlement, where the ground was cultivated, was situated here, and the natives sent off to Mr. Whidbey on the twenty-first of July an abundant supply of fresh herring.

From Point Parker the eastern shore of Chatham Strait extends about thirty miles in a **NW. ¼ W.** direction to Point Marsden. This coast has not been critically surveyed, but is described by Vancouver* as in general only "moderately high and terminating uniformly in a bold shore free from shoals" or other concealed interruptions to navigation.

He found the northerly flood tide always of short duration, the set of the current being usually toward the southeast. The surface of the country is rugged, but produces an abundance of very fine timber, chiefly varieties of pine and cedar, some of which trees measured twenty-three feet in girth. The opposite or western shore rises more rapidly and to a greater height and appeared to him less fertile.

Eight miles northwestward from Point Parker, according to British Admiralty Chart No. 2431, a small bight is indicated, off which are some rocks a short distance from the shore surrounded by kelp in two to five fathoms. According to the chart these are situated in latitude **57° 45′**, and May 22, 1880, the magnetic dip here was observed by the U. S. Coast Survey to be **75° 57′.3**. The rocks as well as the shore were observed to be composed of white marble streaked with green and dipping vertically. The shore behind the beach rises to a considerable height, and has received the name of the **Marble Bluffs**. The entrance to Freshwater Bay and Pavloff Harbor is directly opposite, on the western shore of Chatham Strait. Two or three miles farther north a point known as **Fishery Point** projects into the strait, near which a stream of considerable volume enters the strait, where an Indian fishery for salmon is established in the season of the run. From this vicinity the middle of the entrance to Tenakee Inlet bears about **SW. ¾ W.** About a quarter of a mile off shore, at the mouth of the stream, is a bare rocky ledge or islet, rising ten or fifteen feet above the water. About nine miles northwestward from Fishery Point the southwestern angle of a broad-faced point called **Point Hepburn**† projects into the strait with some rocks near it. The shore between them is more or less indented and there are inshore rocks in several places. From Point Hepburn the shore trends somewhat more northerly about two miles and a half to **Cube Point**, the northern angle of the same projecting mass of land, forming an inconspicuous bight between the two, in the sands at the head of which prospectors have washed out particles of gold.

Cube Point is narrow, bluff, rocky, densely timbered above. At its northwestern end is a square bluff mass of rock connected to the main point by a level strip of dry beach. The rocks are mica schists seamed with veins of quartz containing pyrites, and much contorted.

It forms the western point of entrance of a snug little anchorage named by the U. S. Coast Survey **Square Cove**, of which a sketch was obtained in June, 1880. This cove is about three cables long **NW.** and **SE.** and a cable and a half in width, with two and a half fathoms within a cable of the fine sand beach at its head and deeper water farther out. **Square Cove.**

The cove is but little wider at its entrance than at its head. Its sides rise in bluff walls of rock, heavily timbered above. There are no dangers or obstructions. The broad sand beach at its head is abundantly supplied with drift-wood, and a stream comes in at each end of it, the eastern forming a cascade. From the northeastern extreme of the beach Cube Point and Point Augusta are in one, bearing west.

The latitude of Square Cove is about **58° N.**

No observations have been obtained here.

The cove will afford good protection from all but northwesterly storms for a single vessel of moderate size or several small craft.

In this vicinity the flood tides meet from Chatham Strait, flooding to the northward, and from Icy Strait flooding to the southeastward.

From South Passage Point **NW.** by **N.** about two miles lies **East Point** of Meade, the irregular rather broad eastern extreme of a portion of land which appears to separate Tenakee Inlet from the opening north from the latter. There is *a reef, bare at low water*, extending northwest about a cable from it. Immediately **NW.** from East Point is an opening whose opposite extreme is formed by **North Passage Point, (North Point of Meade,)** which is situated **NW.** by **N. ¾ N.** about five miles from South

* Vancouver, vol. iii, p. 258.

† In honor of James Hepburn, esq., of Victoria, V. I., long a naturalist and explorer in this region, who died about 1866.

Passage Point. Between East Point and North Passage Point is the entrance to Freshwater Bay.

Freshwater Bay. This bay, named by Meade, consists of an entrance about three miles in length **W.** by **S.** ½ **S.** and **E.** by **N.** ½ **N.** and half as wide, beyond which the bay is prolonged to an extent not definitely ascertained, in a westerly direction, forming an arm or inlet. On the southern shore, about two miles westward from East Point, is **Pavloff Harbor,** a cove between three and four cables in extent, of which Meade has given a sketch on U. S. Hydrographic Office Chart No. 225.*

Between East Point, or an angle of it called **Outer Point** by the U. S. Navy in 1881, and the eastern point of entrance of Pavloff Harbor, lies **Wachusett Cove,** about half a mile in extent, of which two-thirds are shoal, extending in a **NE.** and **SW.** direction, widening within from the entrance, which is about a quarter of a mile wide **NW.** and **SE.** The northwestern point of entrance is **Bluff Point,** narrow, high, bold-to and wooded. The opposite shore is wooded, lower and bold-to. The head of the cove is low, marshy, with a stream coming in, and a broad beach occupying nearly half the cove in front of it, dry at low water. The range of the tide is eighteen feet. There are no outlying dangers or obstructions. Anchorage may be had **SE.** from Bluff Point, midway between it and the opposite shore, in eight or nine fathoms. The position of Bluff Point approximately indicated by the U. S. Navy is

Latitude	**57° 50′ N.**
Longitude	**135° 02′ W.**

No directions are necessary for entering it except to keep the lead going and anchor as soon as seven fathoms are had, if the position above mentioned is not selected.

A sketch of this cove has been issued by the U. S. Coast Survey as Harbor Chart No. 734, 1883.

Pavloff Harbor. The eastern point of entrance of Pavloff Harbor,† according to the U. S. Navy, should be about two miles **SW.** by **W.** ¼ **W.** from Bluff Point.

This harbor consists of a rather small cove about four cables in extent **N.** and **S.** and **E.** and **W.,** but further contracted by *a pointed rock.* The eastern and western points of the cove are nearly four cables apart about **W.** ¾ **N.** and **E.** ¾ **S.**; **SW.** by **W.** ½ **W.** from the eastern point three and a half cables and two and a half cables about **SE.** by **S.** ¾ **S.** from the western point, lies *Pinnacle Rock,* named by Meade, ~~two feet out at low water~~. It has three fathoms close-to on all sides except the southwest, where a ledge runs off a short distance. This is the only obstruction, the shores being bold-to, especially on the western side; three to seven fathoms may be had close in. The depth in the cove varies from three to fifteen fathoms, rather regularly increasing toward the middle. At the southern extreme of Pavloff Harbor a good-sized stream comes in, ~~which at a little distance from the harbor forms a conspicuous cascade~~. This stream is of course a salmon run in their season, and an Indian fishing station called Sankeh is located here. The shores afford wood; on the southeast is a beach and small stream of water.

Meade, who made a plan of Pavloff Harbor, which is to be found on U. S. Hydrographic Chart No. 225 under the name of Freshwater Bay, gives the following directions for its use:‡

"In entering this [Freshwater Bay] bay give East Point a berth of at least two cables, as *a reef of rocks,* bare at low water, extends out to northwest of the point. After rounding this point you may haul in and steer **S.** by **W.** into the bay [Pavloff Harbor], and when you bring West Point to bear **NW.** ¼ **W.** and Salmon River **SW.** ¾ **S.** you will have an anchorage in fourteen fathoms water, sandy bottom, tolerably good holding-ground, as the bay is sheltered from all winds and no sea can set in toward the anchorage. On the whole [Pavloff Harbor] is one of the best harbors on the coast. The scenery is very picturesque and beautiful."

The approximate geographical position of the east point of entrance of the harbor is, according to Meade,

Latitude	**57° 50′ N.**
Longitude	**135° 04′ W.**

*There is some conflict of names in this locality. The bay was named **Novaia** or **New Harbor** by Vasilieff on Russian Hydrographic Chart No. 1396, in 1848, and **Freshwater Bay** by Meade in his report in U. S. Navy Dept., Hydrographic Notice No. 13, 1869. The anchorage was named **Pavloff Harbor** by Tebienkoff, (Chart VIII, 1849,) and is represented by a sub-sketch of Meade entitled Freshwater Bay. A cove not definitely located in the bay, but apparently two miles eastward from Pavloff anchorage on the south shore, was named **Wachusett Cove** by the United States naval officers who surveyed it in 1881. In this description Meade's name has been kept for the whole bay and Pavloff Harbor for the western anchorage.

†**Named East Point by Meade, which is an obnoxious name, since there is another East Point only a few miles east of this, at the entrance of the outer bay.**

‡**Owing to the presumed misplacement, on the sub-sketch of Chart No. 225, of the name of East Point above alluded to, the above directions conflict with the chart, and to make sense the words in brackets have been inserted; for it is to be noted that on the sketch of Pavloff Harbor *no reef is shown* stretching off two cables from East Point. If the reef *does* extend two cables northwestward from this particular East Point then the S. by W. course would carry directly on to the reef.**

W NW. about three miles from North Passage Point is **I-youk-een Cove**, named by the U. S. Coast Survey after the supposed Indian appellation. It consists of a bight in the steep and mountainous shore, the points of which bear from each other nearly **S SE.** and **N NW.**, respectively, about one mile. The cove enters the shore in a **W SW.** direction about a quarter of a mile, and is mostly pervaded by deep water. In the **S SE.** extreme of the cove, with a peak about eight hundred feet high bearing **S SW.** and at a distance of somewhat less than a cable northward from the shore, anchorage may be had in twenty-three fathoms. A little to the westward a stream comes in, from the mouth of which in a northerly direction several *reefs* or *shoals* appear to extend. The summit of the northern point is about fourteen hundred feet high, and the whole is densely wooded. A sketch of the cove was made by the U. S. Coast Survey in 1869, and is issued as No. 735 in the series of harbor charts of Alaska. The geographical position is approximately

Latitude	**57° 54′ N.**
Longitude	**134° 58′ W.**

and the variation of the compass is supposed to be about **29° 30′** easterly.

Seven miles northwestward from I-youk-een Cove is a bight called by the traders **False Bay**, and said to be a fair anchorage in summer, but bad in blowy weather.

Twelve and a half miles nearly **NW.** from North Passage Point lies **Point Augusta**, named by Vancouver, and forming the **NE.** extreme of the land known as Chichagoff Island. It is represented in a view by Meade as a high, bold, rocky promontory, its face falling as a cliff to a foot washed by breakers, while above it is bare of trees, and beyond it extends a range of high, snowy, barren mountains.

Its approximate geographical position is

Latitude	**58° 04′ N.**
Longitude	**135° 04′ W.**

In this vicinity Chatham Strait is contracted by the proximity to each other of points Augusta and Marsden, the distance between which is indicated by Vancouver and Meade to be less than four miles. Hereabouts Chatham Strait, as defined in the present work, has its northern termination, though the great valley of which it comprises a part is continued northwestward as Lynn Canal. Chatham Strait, as understood by Vancouver, included the waters separating his George Third Archipelago from the lands adjacent, and extended from the points Lavinia and Wimbledon eastward and southeastward to Christian Sound. That portion westward from Point Augusta is more generally considered as forming a part of Cross Sound or Icy Strait, and herein will be so treated.

According to recent advices Point Augusta is farther south by several miles than the older navigators supposed and Point Couverden farther north, so that the difference of latitude between them is considerably greater than has been supposed. The point is more rounded, and westward from it the shore is less curved southward than the charts indicate.

From Point Augusta, Cube Point, on the opposite shore of Chatham Strait, bears east, eight or nine miles distant, and a projection of the shore on the south side of Point Marsden, (which is about a mile in width **NW.** and **SE.**,) where observations were made May 23, 1880, bears **N. 42° E.** about five miles. The longitude of this last spot was determined as **134° 49′** west of Greenwich, approximately, or about two miles east from its position on the charts. The rocks here are much contorted schists. If bearings on mounts Fairweather and Crillon were accurately measured, the latitude of this spot should be about five miles south of its present location or about **58° N.** It is probable, from the fact that Vancouver considered the piece of water now known as Icy Strait to be a continuation of Chatham Strait, that the northeastern portion of the Chichagoff Group should be represented considerably farther **S.** and **W.** from its present location.

This would explain Vancouver's view of it, and reconcile recent observations which are discrepant with all the existing charts.

Two miles **N. ½ W.** from Point Augusta Tebienkoff places *a patch of rocks* directly in mid-channel. Other charts represent various rocks extending a mile **S.** and **W.** from the **SW.** face of Point Marsden. No further information has been found regarding them, but it is possible they are identical with ***Hanus Rocks***, placed by the United States Navy some distance farther north, being about three miles **SE.** by **E.** from Point Couverden.

At low water the highest point of this reef is seven or eight feet out, and consists of several detached rocks extending a quarter of a mile eastward from the position indicated. A strong current sets across these rocks, which therefore should not be approached within a mile if practicable. This reef is probably identical with that indicated by Tebienkoff in a different position, but as the identity is not yet ascertained, a sharp lookout should be kept for both dangers. ***Hanus Rocks.***

Point Marsden was named by Vancouver, and is described by one of the Coast Survey officers as being only moderately high, timbered, with mostly bold rocky shores. The land in the vicinity is low and well timbered but free from the excessively dense undergrowth which is so usual in this region. Vancouver says, in regard to the shore of Admiralty Island, which extends hence **NW. ½ N.** eighteen miles to Point Retreat, that it is "very moderately elevated, covered with fine timber," and "terminating at the water side with alternate steep rocky cliffs and small sandy bays, with a few detached rocks and islets lying near it."

Just northward of Point Marsden and from its northern angle *a reef* extends a cable and a half, partly visible, behind which is a cove about three cables in extent, known as **Game Cove.** A stream of considerable size comes in from the southward and eastward through a meadow, which is a noted resort for wild fowl, deer and other game. There is a mud flat at the mouth of the stream, and a few cables northward from it is a rocky platform or assemblage of rock and kelp disconnected from but close to the beach. The cove has not been surveyed, but it is supposed good, though contracted anchorage may be found here. Inside the reef and pretty near it the U. S Navy obtained two and a half fathoms. A little farther north the Admiralty shore is penetrated by **Hawk Inlet,** unsurveyed, but extensive, and reaching a considerable distance eastward. From its head a trail used by the Indians leads to the Auke settlement on Stephens Passage.

Beyond this, northwestward, on the same shore and nearly opposite Point Couverden, is **Funter Bay,*** a capacious bay a mile or two deep, supposed to afford anchorage, and with some islands off its mouth. It has not been surveyed. Northward from the bay is a lofty peak called Lone Mountain by the U. S. Navy.

It is now in order to take up again the outer coast, as Chatham Strait may fairly be said to terminate in this vicinity between Point Couverden and the southern extreme of Funter Bay, which is represented by nearly all the charts as projecting to the southward in such a manner as to contract the entrance to Lynn Canal.

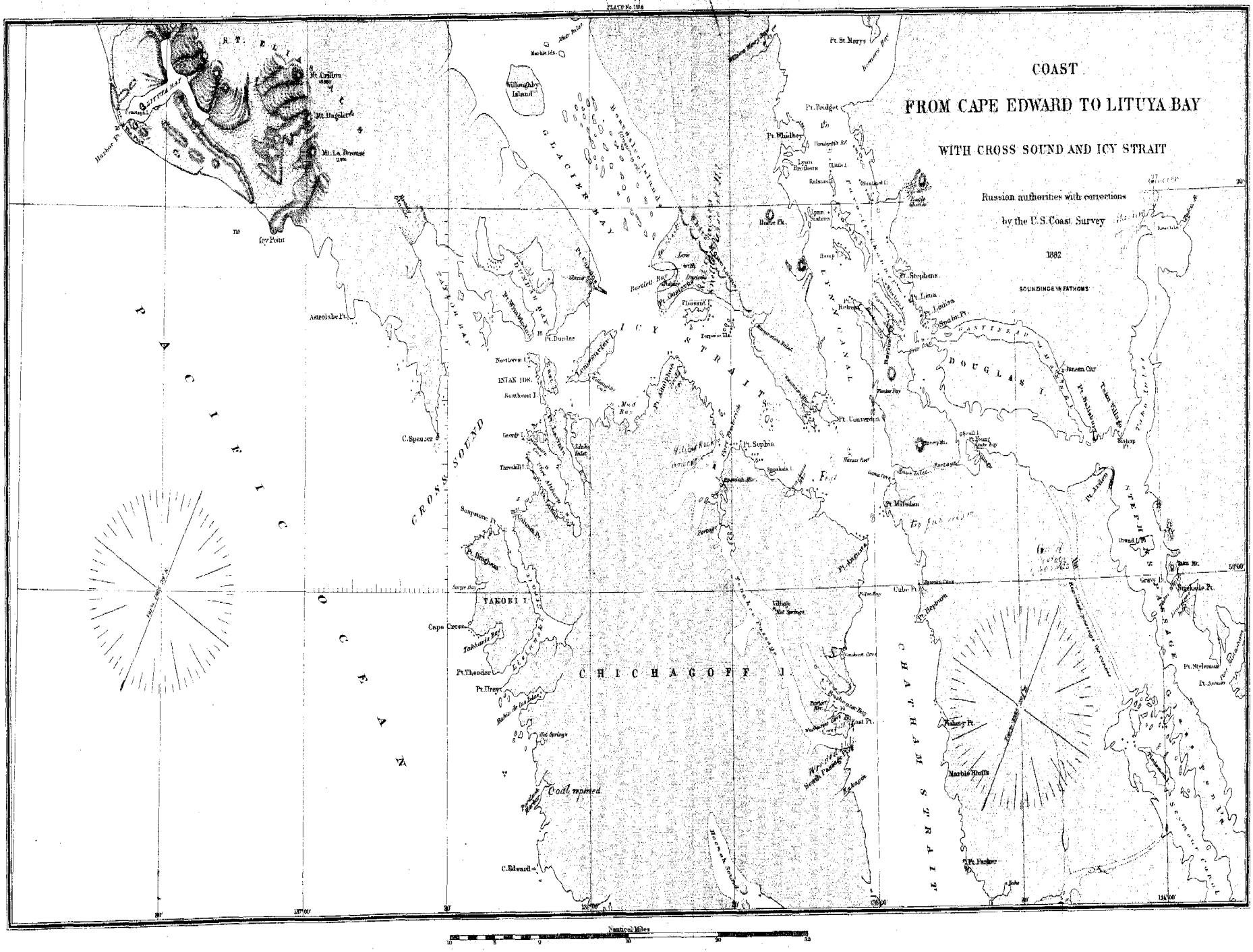
SALISBURY SOUND TO CROSS SOUND.

About **NW.** by **W.** six miles from Point Klokacheff, according to Tebienkoff, on the oceanic shore of the Chichagoff Group, is found the entrance of **Khaz Bay,** apparently named by Tebienkoff, and represented by him as extending inland in a **NE.** direction some three or four miles with a width of about a mile and a half, with bold high points of entrance adjacent to which are *some rocks.* Within the shores appear lower, heavily wooded, and into the bay fall several streams of fresh water. From its position it must receive the full force of the southwest groundswell and be an uneasy anchorage even if it affords any protection whatever. Hence four or five miles northwestward is a projecting point, named by Tebienkoff **Point Hiesman,** beyond which about thirteen miles farther to the westward and northward is **Cape Edward** of Vancouver, the Cape Elkugu of Tebienkoff; a promontory off which lies a small cluster of islets and rocks. It is indicated by Tebienkoff as broad, bluff and rocky; from other observations it is probably of no great height. It is usually laid in about latitude **57° 39′ N.** and longitude **136° 15′ W.**

The coast between Cape Edward and Khaz Bay is charted as bluff, but bordered with numerous small densely-wooded islands, and recedes somewhat to the northward, forming a wide bight. The land behind these islands is lower than that of Kruzoff and Baranoff islands; its coast has not been surveyed, but it is known to be more or less indented and irregular, rising into rugged broken hills and densely wooded except on the higher peaks. It does not appear from seaward to form a precipitous continuous bluff as represented by Tebienkoff. La Perouse gives a good general view of it, but from a distance of several miles off shore. It was also skirted in a similar manner by a U. S. Coast Survey party in the middle of June, 1874, when there was no snow visible except on inland hill-tops. In the middle of this bight Vancouver indicates an opening with some islands in the entrance, and La Perouse's sketch suggests something of the same kind. Anchorage will doubtless be found in more than one locality when this region is surveyed. From Cape Edward the coast in general trends about **W NW.** fifteen miles to the **SW.** point of entrance of Lisianski Strait. Off the shore a great number of low wooded islets are visible, and the land behind them, though hilly and irregular, is timbered and, for the most part, does not rise to any great height. Nearly **NW.** by **W.** about eight miles from Cape Edward Tebienkoff indicates a group of three islets, which lie off about two or three miles from the others and in the direct line between Cape Edward and Cape Cross. These islets appear to mark the entrance of Ilina Bay.

The number and position of the anchorages on the Chichagoff shore **NW.** from Cape Edward are not yet definitely ascertained; it is known, however, that there are several. Of these, that of which we have the best information is **Ilina Bay,** named by the Russians early in this century in honor of the Russian mate or pilot Ilin, who made a reconnaissance of it. The bay, from Ilin's chart, appears

* Named for Captain Robert Funter, one of the earliest explorers and surveyors on the northwest coast of America.


PLATE No. 19b
COAST
FROM CAPE EDWARD TO LITUYA BAY
WITH CROSS SOUND AND ICY STRAIT
Russian authorities with corrections
by the U.S. Coast Survey
1882
SOUNDINGS IN FATHOMS
PACIFIC OCEAN
CROSS SOUND
ICY STRAIT
CHICHAGOFF I.
YAKOBI I.
LYNN CANAL
CHATHAM STRAIT
DOUGLAS I.
GLACIER BAY
LITUYA BAY
Icy Point
C. Spencer
C. Edward
Cape Cross
Pt. Theodore
Pt. Stephens
Juneau City
Pt. Retreat
Pt. Louisa
Pt. Conversion
Pt. Sophia
Pt. Bridget
Pt. St. Marys
Pt. Whidbey
Pt. Bingham
Pt. Augusta
Pt. Anthon
Pt. Stephenson
Marble Bluffs
Fishery Pt.
Coal reported
Nautical Miles

to be about a mile long in a north and south direction and four cables wide. About the entrance are numerous obstructions; within, on the western hand, *rocks and dangers* are frequently indicated. At the head of the bay it divides into a multiplicity of small channels unsuitable for navigation, but where a vessel might be, as it were, docked in a sufficient depth of water. The water in these channels to the **N NE.** of the bay diminishes very gradually from eight fathoms to five. There is communication with a lagoon in this vicinity, and a T'linkit village and fishery existed there. At the **N NW.** extreme of the bay a small bight makes in about two cables in extent, and which receives a small measure of protection through **Partennoi Point**, a small projection of the western shore, off which to the eastward a cable and a half extend *rocks and shoals*. This bight is indicated by Ilin as **Constantine Anchorage** or harbor, and the exact spot marked is about thirty fathoms east of the western shore and a cable **NW.** by **N.** from the end of Partennoi Point. In such a situation it is evident that mooring would be necessary. The depth of water in the bight is from eight to nine fathoms, with five or six fathoms at the entrance on the bar, which extends from the largest rock off Partennoi Point half a cable northward to *a sunken rock* or shoal. In the entrance of the outer bay the soundings are from nine to fourteen fathoms, sand and shell. It appears from the foregoing that this bay and anchorage are of very little importance. While they might be of some use to coasters and small craft, it is eminently probable that within a short distance much better harborage can be found.

The open nature and southern aspect of this bay render it certain that the **SW.** groundswell enters it with hardly diminished force and makes it at all times an uneasy berth.

The latitude of the entrance is about **57° 46′ N.** The geographical position of the anchorage in the bight behind Partennoi Point is, according to Ilin,

Latitude	**57° 47′ N.**
Longitude	**136° 16′ W.**

The variation, reported as being two points easterly by Ilin, (1809?) is now about 30°.

Outside and eastward from the eastern point of entrance a small bight, defended by numerous rocks and shoals, appears on the chart, within which the "wreck of a tender" and a boat anchorage are indicated.

Not far from this vicinity, but with its exact situation undetermined, is **Portlock Harbor**, named in 1787 by that navigator after himself. Portlock places the entrance of his harbor on his general chart in latitude **57° 46′–47′ N.**, but mentions that observations were taken for latitude on the south point of entrance, placing that in latitude **57° 44′** and his anchorage in **57° 46′**; the latter is, however, tabulated in the appendix as latitude **57° 48′**, and on his general chart is placed in **57° 50′ N.**

The position assumed on his general chart is erroneous, as it would make Ilina and Portlock harbors identical, which seems highly improbable when the charts and Portlock's account are compared. Vancouver says that the harbor, "which appeared to be the easiest of access" north of Cape Edward about six miles, was supposed to be Portlock Harbor and to be in latitude **57° 44′**, but the weather was thick, foggy and rainy and the shores not well seen. Tebienkoff has the name in latitude **57° 45′**, but does not indicate anything like the bay described by Portlock. Indeed the description and the chart or sketch of the last-mentioned navigator are so discrepant as to render the whole of little use. The sketch is evidently less reliable than the description; while on a view by Joseph Woodcock, taken in the vicinity, palm trees are represented in large numbers. From Portlock's description the following details may be gathered:

The harbor comprises a large body of water of rounded outline, facing to the **SW.**, four or five miles long in a **SW.** and **NE.** direction and three or four miles broad. It is dotted with numerous islets, and a long narrow neck of land in the **NW.** portion surrounds a completely land-locked basin called **Goulding Harbor.**

The chief entrance to the main bay, or sound as Portlock terms it, is between two points lying **NW.** and **SE.** from each other some three or four miles. This entrance is divided into three passages by islands, of which **Hogan Island** (Vincent Island on Portlock's general chart) is the southeastern, and is represented as roughly triangular about a mile in each direction, bluff and rocky, with rocks and islets about each of its angles. It is separated from the south point of entrance by a clear passage with twenty to thirty fathoms water and about half a mile wide. This passage trends for a mile and a half in a **N.** and **S.** direction. **NW.** from Hogan Island about three quarters of a mile is **Hill Island**, of about the same size, and with rocks extending in a southeasterly direction nearly half a mile from its **SE.** point. **NE.** a quarter of a mile from the shore, not far from the **SE.** point, Portlock anchored in thirty-one fathoms, muddy bottom, perfectly land-locked, and with a small wooded island near by shut on with the rocks off the **SE.** point bearing **S.**

The passage between Hill and Hogan islands is about a mile long **NE.** and **SW.**, widest at the outer end, where it reaches about a mile, and narrowest between the rocks off Hill Island and those off the **N.** point of Hogan Island, where the width is half a mile and the depth only ten fathoms. The remainder of the passage has from thirty to forty-six fathoms, and it is conspicuously marked by a cluster of high barren rocks at the west end of Hogan Island.

Hill Island is separated from the main shore of Portlock's sketch by a narrow passage about a quarter of a mile in length, **NW.** from which less than a mile lies the entrance to **Goulding Harbor**, named by Portlock, and the mouth of which is obstructed by an islet leaving only a passage with a depth of six fathoms and a width of two or three cables. This harbor or basin is represented on Portlock's sketch to be of elongated form, about two and a half miles long **NE.** and **SW.** and not more than a mile wide. It is much obstructed by islets and has a depth of water varying from four to twelve fathoms in general. Several Indian habitations were observed here by Portlock. From its narrow entrance and numerous rocky islets it is evident that this basin is of little consequence to navigators. The country about these islets abounds with cedar of good quality; Portlock obtained also some berries and game.

It may be noted that from his description it would appear that there are a number of passages or inlets connecting with Portlock Harbor which are not indicated on his sketch-chart of the bay.

The coast **NW.** from the entrance to Portlock Harbor is marked by *breakers* in numerous places, mostly not far from the shore. Two miles off shore **NW.** from the entrance Portlock had twenty to twenty-five fathoms, muddy bottom.

About **NW.** by **N.** ten miles from Cape Edward, according to Tebienkoff, (Chart VIII), lies the southeastern point of entrance to an inlet somewhat resembling Ilina Bay in general features, and which may perhaps be the **Bahia de los Islas** of Galiano's Atlas. It is three miles long **NE.** by **N.** and **SW.** by **S.** and about a mile wide. It is perfectly open to the south and has some islets within near its head. In the hills of the vicinity Tebienkoff notes *hot springs*. Off the points of entrance of this bay are several islets—three of good size off the **SE.** point of entrance, distant less than two miles in a southerly direction. Off the **NW.** point of entrance, which has been named by the Superintendent of the U. S. Coast Survey **Point Urey**, in honor of Captain Urey Theodorovich Lisianski, who was the first to indicate it, lie also two rather large islets about a mile and a half from the shore in a southerly direction.

Point Urey is indicated by Tebienkoff as high, bluff and sharply pointed, directed toward the **SW.** It is situated in nearly

Latitude ..... 57° 52′.5 **N.**
Longitude ..... 136° 28′.0 **W.**

and forms the **SE.** point of entrance into **Lisianski Strait**, the passage separating Yakobi Island from the Chichagoff group, and which was first indicated on the chart of that navigator in 1814.* Singularly enough, with the exception of the U. S. Coast Survey charts, all charts examined of later date than 1849 have ignored the work of half a century ago and followed the still older work of Vancouver, who made no special examination of this passage and left its existence in doubt. Since Meade's chart was issued several U. S. naval vessels have passed through this strait, and it was well known to the Russians as early as 1804.

According to Tebienkoff, Lisianski Strait at its **SW.** entrance has a width of a mile and a half, **Point Theodor**, the **SW.** extreme of Yakobi Island, forming the opposite point of entrance and bearing nearly due **W.** from Point Urey. From a point about four miles **S.** ½ **W.** from this entrance (where seventy-five fathoms water was found) the width between the two headlands (seen, however, obliquely to the axis of the strait) was two and a half degrees of arc. A black bare rocky islet, from which extended five smaller ones apparently in a westerly direction, lay off Point Theodor. Behind it the land of Yakobi Island rose gradually in wooded rounded hills, the most distant ones being of a considerable height. A knoll or islet, wooded and slightly saddle-shaped, marked Point Urey, and on each side of it appeared a bare black rock. Farther to the northeast the land of Chichagoff Island rose abruptly from the strait apparently to a height of several thousand feet, with snow on its upper portions, which were barren, while the lower levels were covered with a dense growth of timber. Hence the strait trends **N.** by **E.** ¾ **E.** eight miles, forming a bight to the **E NE.**, where anchorage may be obtained. From this point the direction of the passage is nearly **NW.** ¾ **W.** eight miles to its junction with Cross Sound. Its eastern shore is composed of lofty and barren mountains. Throughout it does not appear to exceed two miles nor be much less than one mile in width, and is clear of hidden dangers. One islet is indicated in the northern portion, and there are in-shore rocks near the northern entrance on both shores. Its western shores are formed by **Yakobi Island.**† The island is irregularly quadrilateral, its sides fronting **NW.**, **NE.**, **SE.** and **SW.**, the latter being much indented while the others are tolerably compact. The whole averages ten miles in length **NW.** and **SE.** and six miles in width. It is densely wooded and of a decidedly less elevation than the adjacent portions of Chichagoff Island. The southern and northwestern parts of Yakobi Island are low, the middle high, with some low

* Named by the Superintendent of the U. S. Coast Survey in 1879. The name **Little Cross Strait** has been suggested for it, but does not occur on any chart.

† Named by Lisianski in 1804; sometimes written **Jacob**, **Jakobieff** or **Jacobi**, apparently in honor of General Ivan Yakobi, afterward the head of the Colonial Direction. It is the **Khaz Island** of Vasilieff. The name Yakobi has also been applied to the land of the Chichagoff group, of which the present island has frequently been supposed to form the **NW.** extreme.



WNW

Cape Fairweather from Litnya Heads

(From a sketch by Asst. Dall in 1874.)



N W ¾ W.

Cape Cross Rocks, 3 Miles.

(From a sketch by Asst. Dall in 1880.)



E. by S.

Cape Cross Rocks, 2 Miles.

(From a sketch by Asst. Dall in 1880.)



N. ¾ W.

S.W. Entrance, Lisianski Strait, 4 Miles.

(From a sketch by Asst. Dall in 1880.)

saddles. The whole island is farther west and south than represented on most charts. Point Theodor, being low and rocky, does not appear from the offing as a conspicuous feature of the coast. From it to **Takhanis Bay*** the shore is bold, rocky, bare for a short distance, broken into knobs and hillocks, but back from the shore is wooded everywhere. Takhanis Bay, about three miles northwestward from Point Theodor, is an indentation of the **SW.** shore of Yakobi Island extending some three miles in a **NE. ½ N.** direction and less than a mile wide at its entrance. But for its small size and the absence of the two islets which mark the southern front of Point Urey the entrance to this bay might be mistaken for that of Lisianski Strait, especially in foggy weather.

This bay, as represented by Tebienkoff, is open to the full force of the **SW.** groundswell, and is not likely to afford a desirable anchorage. About two miles westward from its western point of entrance, and bearing **NW. ½ W.** eighteen miles from Cape Edward, is **Cross Cape**, named by Cook in 1778, having been first seen on Holy Cross day, (May 3d.) It is low and wooded, guarded by rocks extending nearly a mile westward from it. These rocks are mostly large and white. The outermost of the large ones bears a patch of grass, a few stubby trees, and one high, solitary, bare-stemmed tree, with an umbrella-shaped top, which forms an excellent mark. There are some low dry rocks outside of this, and the water hereabouts is in summer discolored by glacial mud from Cross Sound. South a mile and a half from Cross Cape Rocks the U. S. Coast Survey sounded in thirty-five fathoms, June 18, 1880. About the same distance **SE. by S.** from the rocks twenty-five fathoms were obtained, and many fine rock-fish caught. Cross Cape is the Cape Kresta of the Russians. From supposing Takhanis Bay to be the entrance of Lisianski Strait this cape has been, by some authorities, erroneously referred to as the southern extreme of the island. It was placed by Cook in latitude 57° 57′ **N.**

From it the shore trends northward somewhat over three miles to **Surge Bay**, a little inlet extending inland in a **NE.** by **E.** direction about a mile and less than half a mile wide.

From this entrance the coast trends three miles in a **NW.** by **W.** direction to Point Bingham.† It is a rather low, rocky headland, decreasing in height eastward, bordered by small islets, off which, according to Vancouver, are neither rocks, shoals, nor any permanent obstacle to navigation, except such as are near the shore, above water and plainly visible.

The geographical position of Point Bingham is about

Latitude	58° 02′ **N.**
Longitude	136° 34′ **W.**

From Point Bingham the shore of Yakobi Island trends northward and eastward about five miles to **Soapstone Point**, the **NW.** point of entrance to Lisianski Strait.

There is a small bay or inlet just west of this point. The track of the Russian traders on the chart touches at this bay, which would indicate that anchorage is to be had there. The bay is about a mile in extent, with two streams falling into it, but the chart affords no other details. From a mile northward this bay looks shoal and inhospitable, with numerous rocks on each side above water. It is also quite contracted.

Ten miles **N. 32° W.** from Point Bingham lies **Cape Spencer**, named by Vancouver in 1794,‡ a very conspicuous promontory, which forms the **NW.** point of entrance into Cross Sound, and off which lie some rocks or islets which extend about half a mile **SE.** The cape is a narrow, high tongue of land, declining toward its southern extreme, and with a narrow eastern border of low land. It projects from the mainland in a southeasterly direction three or four times its own width. Its geographical position is about

Cape Spencer

Latitude	58° 10′.5 **N.**
Longitude	136° 40′ **W.**

CROSS SOUND AND ICY STRAIT.

The western entrance of this opening lies between Point Bingham and Cape Spencer, and the strait§ separates the coast of the mainland between Cape Spencer and Point Couverden from the Chichagoff group of islands.

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* **Named by Tebienkoff in 1849.**

† **Named by Vancouver in 1794. This is the Cape Cross of La Perouse, but not of Cook, and the Cape Takhanis of Tebienkoff.**

‡ **Cape Tatanikhta of Tebienkoff, 1849, and Punta de Villaluenga of De Mofras' Atlas.**

§ **Cross Sound was named by Cook (Vol. II, p. 345), in 1778, from the day on which it was discovered; the designation has been generally preserved as Kresta Strait by the Russians, Estrada de la Cruz by the Spaniards, and in its original form by most English hydrographers. Long after Cook it was called by the Russians Lohtianoi or Icy Strait, from the floating fragments dropped by the glaciers which abut on its northern borders. This name is in use, however, in numerous other localities. Vancouver was the first to explore the sound, which he limited to that portion west of Point Lavinia, regarding the part between Points Lavinia and Couverden as part of Chatham Strait. If the Russian name be preserved at all it would better be restricted to this latter portion, which hydrographically is almost separated from the sound as defined by Vancouver. They will here be considered together.**

The general course of the strait is to the northward and eastward, in all about fifty-four miles, between the western entrance and Chatham Strait, with a width from shore to shore varying from five to fifteen miles and averaging about eight miles, but in some places much obstructed by islands.

The southern and western portions of Cross Sound are characterized by a great depth of water, freedom from rocks, shoals or other obstacles to navigation, except such as are immediately adjacent to the land and sufficiently obvious to be readily avoided. The chief inconvenience experienced in navigation hereabouts arises from the difficulty of obtaining anchorage, except close to the shore. The northern and northwestern portions of the passage, though yet imperfectly known, undoubtedly afford more or less numerous shoals near the numerous glaciers, derived from the material brought down by the glacial streams. During a considerable portion of the year the navigation of these passages is somewhat interfered with by small pieces of floating ice, usually discolored by mud or gravel, and which present a strong resemblance to sea-beaten rocks nearly level with the water; they were mistaken for such by Vancouver, who found no bottom with eighty and ninety fathoms of line close to these apparent obstructions. In the main sound these floating fragments do not affect its navigation, but in the bays on the northwestern side, at the head of which glaciers come down to the water, the fragments are often so packed as to interrupt boat navigation or the passage of small sailing vessels, though generally constituting no serious obstacle to the motions of a steamer. The northwestern shores are mostly high, formed by the slopes of the great snowy range of the St. Elias Alps. The Chichagoff coast, on the other hand, is comparatively low, wooded, and sustains a moderate population of natives of the T'linkit stock. From Cape Spencer the shore of Cross Sound takes a generally northerly course about seven miles to a low pebbly point, and thence about the same distance **NW.** to a point where a small stream enters the sound from the westward. On the northern bank of this stream Vancouver's party found the remains of a deserted Indian village. The shore-lines of this arm of the bay, which has been named **Taylor Bay*** by the Superintendent of the U. S. Coast Survey, are so encumbered with ice that they have not yet been fully traced. This ice proceeds from a glacier known as the Brady glacier, a few miles distant, which meets the sea at the head of Taylor Bay and has been supposed to originate near Mt. Crillon. The width of the bay in this vicinity is about three miles and the shores are low or marshy, divided by various channels, dry at low water. The northeastern shore, however, though low and broken, trends to the eastward and becomes higher, terminating at the sea in steep, rugged, rocky cliffs, off which a little distance lie three small rocky islands and a number of rocks. The easternmost extreme of this bit of high shore, which is a narrow easterly-trending peninsula, probably broken up into islands, forms **Point Wimbledon**,† named by Vancouver, and bearing from Cape Spencer **NE.** by **N.** ½ **N.** thirteen miles. This point forms the **NW.** point of entrance to the eastern branch of the Sound or Icy Strait. The opposite point of entrance, **Point Lavinia** of Vancouver, is distant from Point Wimbledon about six miles in a **SE.** by **E.** direction, and from Cape Spencer about twelve miles **NE.** by **E.** This point appears to form a little bluff at its extremity, with rather low land behind it, gradually rising to a greater altitude in a **SE.** direction. It is well wooded with evergreen trees, and also forms the northeast extreme of Port Althorp.

Obstructing the passage between Points Lavinia and Wimbledon, according to Vancouver and the Russian charts, are the **Inian Islands**, a group consisting of three principal islands, one low and two high, and a few rocks.

The most eastern of the group, as represented by these authorities, is **East Island**, three miles long **NW.** and **SE.** and a mile and a half broad, apparently bold-to, rocky, rather high and wooded.

Northwest and **Southwest** islands are separated from each other and from East Island by passages which narrow to a quarter of a mile and appear obstructed by numerous rocks. Between Southwest Island and Point Lavinia a channel exists close to the island, used by the Russian traders, but subject to a strong tide-rip. It has a width of about three cables. This passes northward of all the islets **S SE.** from Southwest Island. Between Point Wimbledon and Northwest Island there is a broad clear passage over a mile in width. The channels between the islands are inadvisable until more is known.

From Point Lavinia about six miles **SE.** by **S.** ¾ **S.** lies **Point Lucan**, named by Vancouver,‡ and which forms the northern extreme of the irregular rocky strip of shore which extends northeastward from the northern entrance of Lisianski Strait. Between this point and Point Lavinia is included the entrance to **Port Althorp**, named by Vancouver, and forming the best port in the sound. This arm of the sea extends about ten miles in a **W.** by **N.** ½ **N.** and **E.** by **S.** ½ **S.** direction, with an average width of two and a half miles. The port contains two anchorages, of which the southeastern is situated near the head of the inlet, protected by sundry islets and rocks, affording anchorage in eighteen to twenty-five fathoms. Little is known of it.

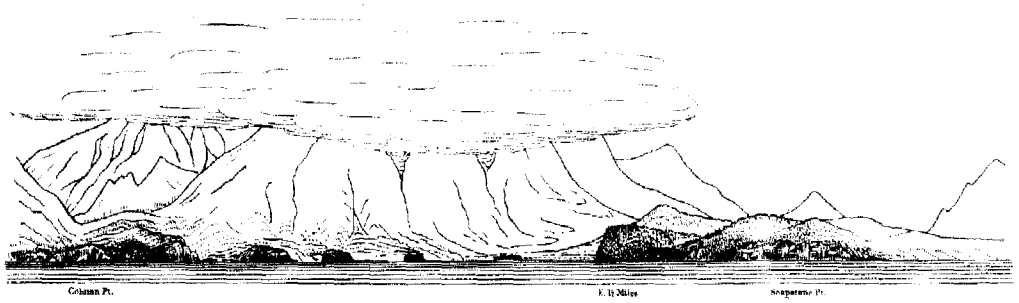
Port Althorp.

The entrance of the port is protected by islands which have been named by the U. S. Coast Survey. Its shores are mostly rocky and rise, especially the eastern shore, densely wooded, to tolerably high mountains. Near the southeastern extreme of the port it is somewhat lower. In the main body of

* In honor of Mr. C. H. Taylor, of Chicago, who visited this locality while exploring in this region.

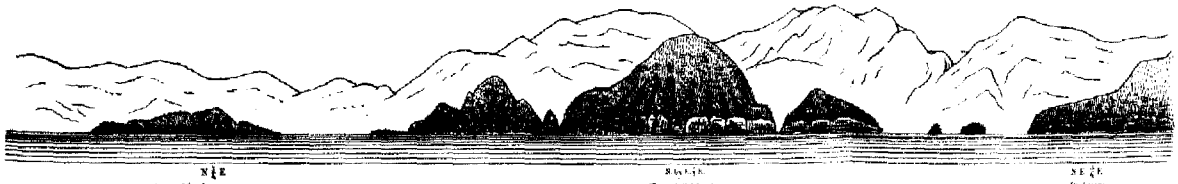
† **Wimbledon** on Russian Hydrographic Chart Nos. 1494 and 1396.

‡ On British Admiralty Chart No. 2431 and U. S. Hydrographic Office Chart No. 225 this name is transferred by some oversight to **Column Point**, the **NE.** point of entrance to Lisianski Strait.



North Entrance, Lisianski Strait.

(From a sketch by Asst. Dall in 1880.)



Entrance to Port Althorp

(From a sketch by Asst. Dall in 1880.)

the port are various groups of rocks above water. Its southwestern point of entrance, as above stated, is formed by Point Lucan, whence the shore, rocky and with several small coves and indentations, extends in a direction **SW.** by **S.** ½ **S.** about four miles to Column Point, the northeastern point of entrance to Lisianski Strait. This point is low and rocky, with several rock pinnacles or columns near it, and the land eastward from it rises into high mountains, bare above, with ravines full of snow and wooded near their bases, which approach closely to the strait and border it with small rocky bluffs alternating with irregular indentations. A small islet with several bare rocks about it lies off shore about a mile and a half northward from Column Point.

The islands off the entrance of Port Althorp are bold, conspicious and densely wooded. From a point about two miles to the southward from Point Lavinia a group of small islands and rocks extends to a distance of somewhat over two miles in a **SW.** by **W.** ½ **W.** direction. **George Island,** the largest of these islands, is nearly the most western, and, while guarded in all other directions by numerous, mostly visible rocks, has on its **S SW.** side a tolerably snug cove, in which Vancouver anchored, known as **Granite Cove.** George Island is composed of three not very high granite domes, which are connected by low isthmuses to which coves make in from each side. Eastward from it is another, separated by an unsurveyed passage. To the north and west from George Island are a number of off-standing, generally high, bare rocks. Beyond these, half a mile from the shore, an anchorage is indicated by some authorities. On the south and east is Granite Cove, about two cables in extent, with anchorage in the center of it in sixteen to eighteen fathoms, soft mud, good holding-ground, and well protected from all except **E SE.** winds. The shores of the cove are mostly rocky and should not be closely approached, but the small isthmuses have sandy beaches on which boats may land. The northern one is snugly protected by a rocky point, off which is *a sunken rock* in the middle of the opening. Several Indian huts are situated here, and it is a snug place for a camp, but there are no streams, and, in a dry time, fresh water is not easy of access. **Granite Cove.**

A reconnaissance of Granite Cove, of which the entrance is perfectly clear of obstructions, was made by the U. S. Coast Survey in 1880, and issued as Harbor Chart No. 741 in 1883. The position of the astronomical station on the southern isthmus was

Latitude	**58° 11′ 32″ N.**
Longitude	**136° 23′ 30″ W.**

The magnetic declination in 1880 was **32° 15′** easterly and the dip **72° 22′.** The rise and fall of tide observed was about eight feet. There is plenty of wood but no stream of water. No directions are necessary for entering it.

Southeastward of George Island, and **W NW.** from Point Lucan about a mile, is the **SE.** end of **Three Hill Island,** which extends over two miles in a northwesterly direction with a width not exceeding half a mile; composed of three high hills united by low isthmuses. Its southerly and westerly shores are guarded by rocks. The northern hill rises seven hundred and fifty and the middle one thirteen hundred feet. Between this island and Point Lucan are two small islets and some rocks; a passage exists, but narrow and incommodious. Between the northwestern end of Three Hill Island and the western extreme of George Island is the chief entrance to Port Althorp, these two points forming the actual points of entrance. Neither should be too closely approached, since there are a number of visible rocks about them, extending to the westward, and leaving a clear passage about a mile wide, having a shoal in the middle consisting of a rocky ledge covered with not less than nine fathoms water, on each side of which the depth increases to thirty or forty fathoms.

Vancouver's plan of the port and the entrance to Cross Sound has been copied by Tebienkoff, (Chart VIII,) the U. S. Coast Survey, (Atlas of Harbor Charts,) and on an old Russian chart published without date. The scale on the latter is erroneous, leagues having been mistaken for miles. Upon it the longitude of the anchorage is given as **136° 25′ W.** and several of the modern charts make it **136° 15′ W.**

A sketch of Granite Cove and part of Cross Sound was published in 1883 by the U. S. Coast Survey as No. 741 of its series of Alaska harbor charts. On the sub-sketch to this the position of Cape Spencer has not been corrected, owing to absence of the data at the time of publication.

The northern extreme of Yakobi Island, southwestward from Column Point about two miles, is low, bluff at the water, fringed with rocks, and presents a northward rocky face of a greenish appearance resembling soapstone, and was named Soapstone Point by the U. S. Coast Survey in 1880. Behind it are low flattened hills densely wooded, with a snow-clad peak (June) in the far distance.

It has not been possible to correct the positions of the shores of Cross Sound on the chart in the present work. There are no means of assorting the error between the eastern and western portions of Cross Sound and Icy Strait. But it is eminently probable that all the northern part of the Chichagoff group requires to be moved farther westward on the charts. An attempt has been made on the chart herewith to partially correct the northeastern portion, but until more information is at hand the result cannot be satisfactory.

From Point Wimbledon **NE.** about two miles lies **Point Dundas**, named by Vancouver, and which is a narrow tongue of high land trending in a **N.** and **S.** direction. The geographical position of Point Dundas is, approximately,

Latitude	**58° 21′ N.**
Longitude	**136° 18′ W.**

Between it and Point Wimbledon is the entrance to a branch which has been named by the Superintendent of the U. S. Coast Survey **Dundas Bay**, extending in a westerly direction some eight miles with a breadth of two or three miles, and communicating near its western extreme with a very shallow lagoon, which appeared to Vancouver's party to be connected with Taylor Bay to the southward and westward. Dundas Bay has but eighteen fathoms in its entrance—a remarkable circumstance in this region of great depths and bold shores. Within it *shoals* extend from the northern shore to half a mile from the Wimbledon shore. Farther west the branch is obstructed by shoals, rocky islets and rocks extending across, while the whole width is diminished to a mile. The shores of Dundas Bay have not yet been definitely surveyed, but its peculiarities are unquestionably due to the fact that it is an estuary to a number of glaciers which descend from the flanks of the St. Elias Alps and here meet the sea. Within the entrance good and secure anchorage might be had in moderate and regular soundings, but the large amount of floating ice forms an annoying impediment to motion in these waters.

From Point Dundas the coast takes a **N NE.** direction for six or seven miles to a low point, which was named by the U. S. Coast Survey in 1879 **Point Carolus**, off which a sand-spit extends a mile and a half or more. Here the shore suddenly turns toward the **NW.**, the point itself forming the southwest point of entrance to an extensive bay which has been named by the U. S. Navy **Glacier Bay.** Whidbey and Lemesurier reported to Vancouver that on reaching Point Carolus they were visited by natives who came out from a small shallow creek a short distance westward from the point. To the north and east from their station "the shores of the continent form two large open bays which were terminated (July 12, 1794) by compact solid mountains of ice rising perpendicularly from the water's edge, and bounded to the north by a continuation of the united lofty frozen mountains that extend eastward from Mount Fairweather. In these bays also were great quantities of broken ice, which, having been put in motion by the springing up of a northerly wind, were drifted to the southward,"* and consequently obliged them to give up explorations on that side of the strait. Up to a very recent date, no explorations of this vicinity have been made. Tebienkoff† appears simply to have followed Vancouver in his representation of this vicinity, and on other charts hydrographers have done the same. It would seem, therefore, that there was, at the time of Whidbey's visit, an unusual discharge of ice from the glaciers about the bay which had accumulated near its mouth. The bay has not been surveyed, and all that we know of it is from information collected by Captain L. A. Beardslee, U. S. N., published in Hydrographic Notice No. 97 of 1880, issued by the Hydrographic Office of the Navy Department, and some notes communicated to the U. S. Coast Survey by Captain W. E. George, in 1883.

Glacier Bay.

From the last-mentioned source it is learned that the projecting point, charted by Vancouver, and named by the U. S. Coast Survey in 1879 **Point Gustavus**, forms the southeastern point of entrance to Glacier Bay, though situated farther east and south than is generally represented on the charts. This point is situated about seven miles eastward from Point Carolus and is quite low and destitute of trees, but the land behind it, also low, is studded with sand dunes or moraine mounds, which from a distance might appear like islands and thus explain the representation of the point on the U. S. Naval Hydrographic Chart No. 225 as part of the Beardslee Islands. Point Gustavus extends **SW.** beyond the tangent of the **SW.** part of Pleasant Island, and the low land behind it stretches to the foot of the mountains in a northeasterly direction nearly ten miles without elevations, except the dunes or mounds above mentioned, which do not exceed one hundred and fifty feet in height. The point is thickly covered in summer with grass, herbage and shrubbery of a bright green hue, very different from the aspect of most of these shores, which are either rocky or clothed with dark green coniferous trees. The beach is of gravel or boulders shoaling gradually off, but at a distance of three-quarters of a mile there is more than fifteen fathoms water. The western shore of Point Gustavus curves to the northward several miles to a bay about three miles in extent, trending in a **N NE.** direction, which has been named by Captain George **Bartlett Bay.** It is open to **SW.** and **W.**, and on its southern shore is a fishing and trading station. Off this a quarter of a mile anchorage may be had in sixteen fathoms, muddy bottom, with five fathoms half a cable farther in shore. Beyond this point the bay extends inland about two miles. From its northern point of entrance the shore curves to the **N.** and **NE.** five or six miles toward the foot of the mountains.

* Vancouver, Vol. III, pp. 244–5.
† Chart VIII, 1849.

From near its **NW.** point extends a group of islands known as the **Beardslee Islands,*** named by the U. S. Navy, about ten miles in a **W NW.** and **E SE.** direction. There are said to be hundreds of them, some low and bare and some higher and wooded. Beyond them the shores of Glacier Bay are destitute of living timber and almost without vegetation, yet with large trunks and stumps of dead timber apparently crushed down by the ice, and giving color to the tradition of the resident Indians, who say that many years ago the glaciers extended down the bay as far as the Marble Islands.

Glacier Bay appears to have been first examined by an explorer named Willoughby. It was afterward entered by Rev. S. R. Young and John Muir, and still later by the steamer *Favorite* with Captain L. A. Beardslee, U. S. N., and Lieutenant G. C. Hanus, from whose report the sketch and description of the bay was prepared for Chart No. 225.

From Point Carolus the bay is supposed to extend some thirty miles in a west-northwesterly direction with a width of ten or twelve miles. The northern shore is only known by report.

Twelve or thirteen miles from the entrance is **Willoughby Island,** named by the U. S. Navy, high, bare, and supposed to be five or six miles long **W NW.** and **E SE.** and about half as wide.

Eastward and northward from Willoughby Island are two small islands, named by Captain George the **Marble Islands,** from the rock of which they are composed.

Southward from Willoughby Island **Berg Inlet** penetrates the shore of the mainland in a southerly direction. There are two openings, one on each side of a large island which obstructs the mouth of the bay. The western entrance alone has been examined. This is nearly closed by *a bar* extending across it with a breadth of half a cable, over which there are not less than three and a half fathoms at high water with deeper water inside. The bar and island have the appearance of being of glacial formation. This part of the bay is stated to be destitute of timber. Several miles up this inlet is a fishing village of Hooniah Indians. At a distance from the shore of three-quarters of a mile to one and a half miles, running up from Point Carolus to Berg Inlet, numerous soundings were taken by Lieutenant Hanus with a sixteen-fathom lead-line, but no bottom was obtained. According to the reports of Willoughby and Muir, the upper part of the bay receives seven glaciers. **Glaciers.** The first enters through a small bay **SW.** from the western end of Willoughby Island. Beyond this is another bay with a glacier about half a mile wide at its mouth. The next, which comes in from the **W SW.**, is three-quarters of a mile wide. At the extreme head of Glacier Bay is a glacier about a mile and a half wide, called by the natives by a name signifying the great glacier. The fifth and sixth, on the northwestern shore of the bay, are each about half a mile wide at the foot, and the last is the smallest of the six. On the north shore of the bay, opposite Willoughby Island, **Muir Inlet** opens to the northward, about three miles wide at its entrance. It curves about five miles to the northward and westward to the foot of an extremely large glacier, called the Muir Glacier, which extends clear across the head of the inlet. This glacier may extend fifteen to eighteen miles into the interior and is reported by Muir to have sixteen minor branches.

A quarter of a mile from the face of this glacier Captain George sounded in seventy-five fathoms. Its face was composed of a very high perpendicular wall of ice a mile and a half wide, but the breadth of the glacier rapidly increases inland. The constant and tremendous fall of ice from the glacier foot makes it dangerous to approach within a quarter of a mile. The ice seen in Glacier Bay is derived from these glaciers. A little of it even reaches the Pacific through Cross Sound, but it is said that most of it merely drifts to and fro between the shores of Icy Strait until it decays and melts away. Much of it is covered with mud and stones and resembles, when still, reefs or rocks awash.

The ice appears to run most copiously in the part of Glacier Bay and Icy Strait northward and eastward from Point Carolus. This part of Cross Sound is said to be dangerous for sailing vessels, it being subject to heavy fog, much floating ice in large pieces, and a strong tidal current estimated to run three knots.

DIRECTIONS FOR ENTERING GLACIER BAY.

From the Westward.—The shore between points Dundas and Carolus should not be approached too closely, and a particular lookout should be kept for the sand-spit off Point Carolus, which is said to extend a mile and a half eastward from the point. After rounding Point Carolus steer about **W.** by **N.** for Willoughby Island at a distance from the southern shore of not less than half a mile.

From the Eastward.—When about two miles to the **N NE.** from the northeastern extreme of Lemesurier Island the course will be about **W NW.** until the bay is entered, after which proceed as above.

From the eastern point of entrance of Glacier Bay the shore extends in a northeasterly direction, curving so as to form a bight whose northern shore is the margin of the low land before reported, which shoals off very gradually to a considerable distance.

* Also called **Sand Islands.**

This bight contains a large island called **Pleasant Island,*** two or three miles in length and about half as wide **N.** and **S.**, moderately elevated, its shores pleasant and easy of access, well timbered, mostly with spruce trees. It "presented a much more inviting appearance than they had been accustomed to behold."†

West of the western point of Pleasant Island Captain George obtained no bottom at fifteen fathoms half a mile off shore. The passage between Pleasant Island and the low shore is navigable and from one to two miles wide. The channel is near the island, half a mile or more from the low shore, where fifteen to eighteen fathoms may be had. Three miles northeastward from the western entrance of the channel is **Noon Point**, the **NE.** extreme of Pleasant Island, from which *a ledge of rocks* makes off about three cables, covered at high water. Here the passage curves to the eastward and is about a mile and a half wide, the fairway in mid-channel **E. ½ N.** and **W. ½ S.** At the southeastern end of Pleasant Island are some dry rocks, and about two miles from it is a group of small rocky islands, called by the U. S. Navy the **Porpoise Islands.** The passage passes northward and eastward from them, with soundings in ten and fifteen fathoms, sand and shell, affording a fair anchorage, though somewhat open to the **SE.** From the Porpoise Islands a *long low ledge* extends half a mile to the southward, and from the largest one *another ledge* extends an equal distance in a northerly direction.

NE. by **N. ½ N.** from the Porpoise Islands, on the main shore, is a deep narrow inlet trending in that direction, it is supposed, for nearly ten miles. Near its mouth are some Indian houses. It was named **Excursion Inlet** by Captain George, who entered it in 1883 in the excursion steamer *Idaho.* From the entrance of this inlet the passage extends in a southerly direction a short distance to the main strait. From the point of turning the shore extends in a nearly **E.** by **N.** direction to Point Converden, with no deep indentations or foul ground extending off, such as appear on some charts. The statement published by Vancouver is to the effect that it was found to be compact and moderately elevated by Whidbey, exhibits several small coves and streams, and was at that time inhabited by natives of the T'linkit race.

SE. by **E.** four miles from Point Dundas and two miles **NE.** from the Inian Islands lies the western extreme of **Lemesurier Island,**‡ which extends nearly in the middle of the strait about six or seven miles in a **N NE.** and **S SW.** direction and is about three miles broad. It is moderately high and timbered. Near its southwest end there appear to be *some rocks*, and it is stated by Hanus that there are *reefs* off nearly all the points on the southeastern shore of this island. A little southward of the middle of the southeastern shore of the island is a bight, moderately indented, and having a small cove penetrating more deeply near its southern end. This has been named **Willoughby Cove** by the U. S. Navy, and is about a cable in extent, affording anchorage in eight to fourteen fathoms, muddy bottom. There is a beach at its head with an Indian village. The holding-ground is excellent. The cove is open from **SE.** to **N NE.** A very strong current sets by outside its mouth, creating strong eddies and bearing fragments of ice. It is said that the ice never enters the cove, though much is washed ashore in the bight northeast of it. It is evidently necessary to go well in. The northeastern extreme of this bight is **Iceberg Point**, named by the U. S. Navy. *A reef* extends **E SE.** from it, uncovering a quarter of a mile at low water, and breaking in rough weather nearly an equal distance farther eastward. This locality is represented by a sketch on U. S. Hydrographic Office Chart No. 882 of 1880.

Willoughby Cove.

CHICHAGOFF SHORE OF ICY STRAIT.

From Point Lavinia the southern shore of Icy Strait takes a general direction **E.** by **N. ¼ N.** for some eleven miles, having numerous small open bays, near the shores of which some rocks were seen by Vancouver's party. Immediately eastward from Point Lavinia is an inlet, named by Captain George **Idaho Inlet**, which he supposes to be seven or eight miles in extent in a southeasterly direction, with an average width of two-thirds of a mile, bold shores and clear navigation up to within a mile of the head. There two large streams come in and have formed a bank, on which the *Idaho* grounded. It is a great resort of the natives for salmon fishing, and considered by Captain George an excellent harbor.

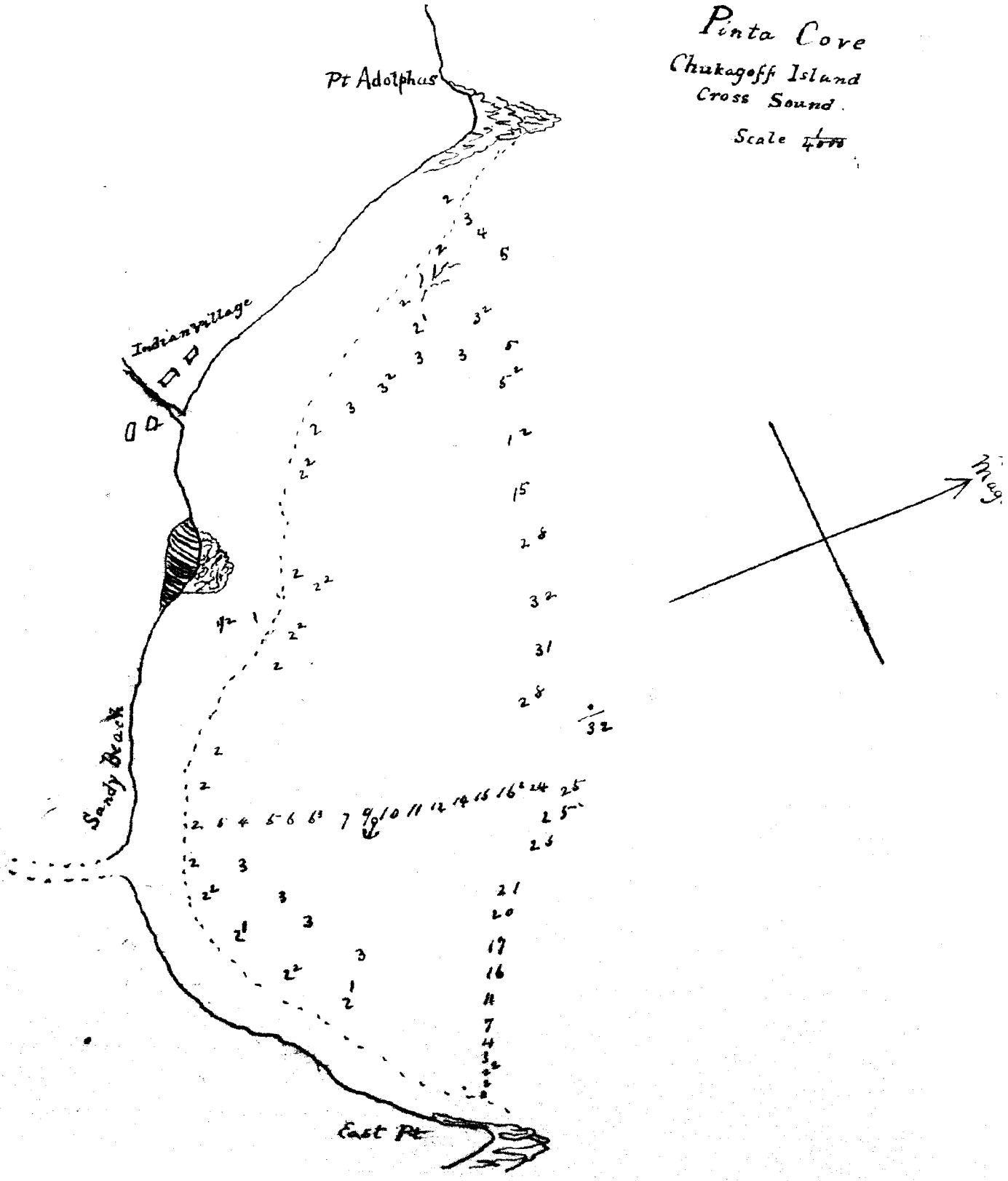
About eleven miles from Point Lavinia a point with a small island off it projects from the shore, which is indented, forming a large bay, beyond which the shore changes its direction for one about **N.** by **E.** This bay was named **Mud Bay** by the U. S. Navy in 1880. The point forming the western extreme of the bay is known as **Quartz Point.** It is low and from the northeastward appears like a group of islands. The shore of its **NW.** portion, which appears like an outer island, is marked by large masses of white quartz which resemble ice. A small island, called by the U. S. Navy **Goose Island**, lies off this point, and at low water *a reef* between them uncovers nearly its whole extent. The southern shore of Mud Bay has the appear-

Mud Bay.

* Named by the U. S. Coast Survey in 1879.

† Vancouver, Vol. III, p. 245.

‡ After the officer who commanded one of the boats of the party exploring this passage under Vancouver. Named by the U. S. Coast Survey in 1879.


Pinta Cove
Chukagoff Island
Cross Sound
Scale 1/4000
Pt Adolphus
Indian village
Sandy Beach
East Pt
Mag.

ance of an immense sand-spit extending from the eastern to the western shore of the bay. There is an extensive mud flat, with soundings varying from four to seven fathoms water, about three-quarters of a mile eastward from the west shore of the bay. Six fathoms muddy bottom was found about three-quarters of a mile eastward from Goose Island. The holding-ground is excellent. In August, 1880, a number of small icebergs in Icy Strait were in sight from the anchorage, which is in general clear of ice, even when the strait is much incommoded.

The information in regard to Mud Bay is derived from the report of Lieutenant Hanus. Off the eastern point of entrance of Mud Bay pilots report *a rock*, uncovering at low water, about an eighth of a mile westward from the shore. A short distance to the eastward another point makes out about a cable off, which is *a rock* covered at high water. Off the middle of a bight of which the last-mentioned point is the western extreme is a *sunken rock* about one hundred and fifty yards from shore. This bight is the second westward from Point Adolphus, the first being a mere curve hardly indented in the shore-line. **Dangers.**

From the head of Mud Bay, as above mentioned, the shore changes its direction, and from thence it extends in a **N.** by **E.** direction about six miles to **Point Adolphus** * of Vancouver. This is the **NW.** extreme of the shore of the Chichagoff group, and is low, well wooded and steep-to. Some charts indicate a visible rock near its extremity. Its geographical position is about

A reef some distance off-when uncovered shows help the point a mile South

Latitude	**58° 18′ N.**
Longitude	**135° 41′ W.**

* See Pinta Cove anchorage on chart-

There is a large Indian village a short distance ~~westward~~ East from Point Adolphus.

From Point Adolphus the shore takes an easterly and east-southeasterly curve for some nine miles, with a number of islets near it, to the entrance to **Port Frederick** of Vancouver. This is an inlet or branch of some importance, but which has hitherto been but partially explored. The entrance faces the north and is about two miles wide. Near its western headland are several good-sized islets. The passage used by traders passes to the eastward of all these islands, but the Russian Hydrographic Chart No. 1494 indicates that the northernmost islet may be passed on either side. Within the entrance and some four miles southeastward from the outer entrance island is a low wooded island somewhat less than two cables in extent, and named by the U. S. Navy **Pitt Island**.† Northward from it is a protected cove about a quarter of a mile long **W.** by **N.** and **E.** by **S.** and two cables wide. From the fact that a large village of the Hooniah Indians, called Kan-tu-kan, exists on the northern shore, this cove has received the name of **Hooniah Harbor**‡ from the U. S. Navy. **Port Frederick.**

The eastern extreme of Port Frederick is named **Entrance Point**, which is a high bluff, showing a perpendicular wall of brownish-red rock one hundred and fifty feet high. The end of this point is indented by a small bight, chiefly occupied by a rocky pinnacle forty feet high, with a few stunted hemlock trees upon it. Within fifteen yards westward from its base there is six fathoms water. The shore to the eastward of Entrance Point shoals off nearly a cable, then drops rather suddenly to deep water.

Between the eastern end of Pitt Island and the shore **NE.** from it there is only one or two fathoms water, and the island itself is bordered by a bank like that on the opposite shore, which extends off one hundred yards or less.

The anchorage is midway between the shore of Pitt Island and the Indian village, in eight to fourteen fathoms, sticky mud. The holding-ground is excellent and there are no dangers. No directions appear necessary except to keep at least three-quarters of a cable from the shores. The range of the tide is about thirteen feet.

The general appearance of the land is high, sloping in either direction, northwestward and southeastward, from a spot near Entrance Point, where the extreme height is about three hundred feet.

The Northwest Trading Company have established a station here.

From the inner island on the western side of the entrance to Port Frederick, **SE.** by **S.** ½ **S.** two-thirds of a mile, lies *Halibut Rock*, uncovered at low water.

The southern shores of Port Frederick are much broken. Half a mile **E SE.** from Hooniah Harbor, between **Cliff Point** on the north and **False Point** on the **SW.**, is a shallow unexplored indentation with an Indian fishing station on the south shore. **SW.** from False Point about a quarter of a mile is Green Island, from which *Black Reef* extends a quarter of a mile westward. Immediately **SE.** from Green Island and the reef is Long Island, half a mile long **SW.** by **W.** and **NE.** by **N.** Its western extreme is called Dome Point.§ Between Green Island and False Point the greatest depth

* Called on some Russiann charts **Point Adolph.**

† U. S. Hydrographic Office Chart No. 883. In U. S. Hydrographic Notice, No. 97 of 1880, it is called **Harbor Island.**

‡ Spelled **Hoonah, Hoontah** and **Hoonyah** harbor. It is also referred to in *U. S. Hydrographic Notice, No. 97 of* 1880, as **Port Frederick Harbor.**

§ These names were applied by the U. S. Navy.

is less than two fathoms. Southeast of these islands is **Berry Arm**, which extends to a point four or five miles from Hooniah Harbor to a portage about one hundred and fifty steps wide at high water and rising fifteen feet above the sea. On the other side of this portage is the head of Tenakee Inlet from Chatham Strait, (see page 178.)

Southwestward from Green Island is another entrance, unexplored, but which, according to the Indians, does not connect by portage or otherwise with Hooniah Sound and Peril Strait, as was formerly supposed.

Outside of Entrance Point, according to Lieutenant Hanus, and near it, a low grassy point makes out from the shore from which *a bank* extends off half a cable.

Thence northward and eastward to Point Sophia the Chichagoff shore may be approached to half a cable. At a distance of a cable and a half no bottom could be had with sixteen fathoms of line.

The arm of land of which the westernmost extreme forms the eastern point of entrance to Port Frederick, at its northern extreme forms a point to which Vancouver applied the name of **Point Sophia**,* about three miles **NE.** by **N.** from which are two rocky islets (named the **Sisters** by the U. S. Navy) in the strait, bold-to on either side.

Eastward from Point Sophia the shore is compact, not very high, but well wooded, presenting chiefly rocky cliffs with islets and detached rocks lying off to the distance of nearly two miles. This coast trends nearly due east, with minor irregularities, to the western point of entrance to **Spasskaia**† **Harbor**. According to Russian Hydrographic Chart No. 1494, which has been copied on British Admiralty Chart No. 2431 and U. S. Hydrographic Chart No. 225, this harbor is situated to the westward of the first and only very prominent point westward on this shore from Point Augusta. According to Tebienkoff, (Chart VIII,) the harbor is situated to the eastward and southward of this prominent point, making the prominent point aforesaid essentially the western point of entrance of the harbor. It is not however improbable that there are really two bays, and to the one known to him, but not to Vasilieff, Tebienkoff may have transferred the name applied by Bubnoff to a harbor which Tebienkoff himself did not know. In that case the harbor delineated by Tebienkoff would have to take a new name.

The true Spasskaia Harbor was surveyed in the early part of this century by Bubnoff, teacher of navigation in the Colonial Seminary, who gives as the geographical position of the anchorage in the **NE.** corner of the bay

Latitude	**58° 06′ N.**
Longitude	**135° 17′ W.**

The harbor is about a mile long **NE.** by **N.** and **SW.** by **S.** and a little less than half a mile wide, at the entrance of which the two points bear about **W NW.** and **E SE.** from each other. The general direction of the **SE.** shore is **NE.** and **SW.**, with a small cove just within the eastern point of entrance and another, *very shoal*, three-eighths of a mile within the point. The **NW.** shore trends **N NE.** and **S SW.**, with an open cove midway from the western point of entrance to the head. At the latter point the shores form a rather sharp angle where two streams come in, creating *a bank* and shoaling the water of the **SW.** third of the harbor to less than three fathoms. Four and a half fathoms is the greatest depth in the **SW.** half of the harbor, but it rapidly increases to forty-two fathoms in nearly the middle of the entrance. The harbor is wholly open from **NW.** by **N.** round to **NE.**, but in the cove under the **E.** point of entrance protection may be had, except from **W NW.** to **N.** This cove is less than a cable in extent, shoal toward its southern shore, but having twenty-eight feet of water near the middle. It would be indispensable to moor. The **E.** point of entrance is a high bluff, bold-to. The **W.** point forms a low bluff with *some rocks* running off half a cable to the northward.

The above is derived from Bubnoff's chart, which is reproduced on a reduced scale, with Tebienkoff's longitude, in the U. S. Coast Survey Atlas of Harbor Charts of Alaska.

Hence to Point Augusta the shore for nine miles trends in a generally easterly direction according to Vasilieff. About half way between the two localities would be found the bay called Spasskaia Bay by Tebienkoff, if it exists.

THE CHICHAGOFF GROUP,

Otherwise known as **Chichagoff Island**, (but probably more or less divided by water, like the Admiralty group,) was first known to the Russians as **Yakobi** or **Jakobia Island**, a name restricted in 1805 by Lisianski to the island herein so denominated, while the name of Chichagoff, which had also been applied to the whole, from Admiral Chichagoff, an explorer of the Polar Sea, he set aside for the present group, and it has subsequently been generally so called. The group forms the northern

* This is **Point Sophie** of Russian Hydrographic Chart No. 1494.

† "Of the church of our Saviour" is the literal meaning in English, but the place was probably named after Gregori Spasskaia, a Russian hydrographer. It was named by the Russians in the early part of this century, and has been written **Spaska**, **Spaskai** or **Spaskaia Bay**, **Port Spaskia**, etc., by various authors.

half of Vancouver's King George Third's Archipelago, and is the Khunna or Hoonah Island of Tebienkoff. It is the least known group north of Sumner Strait. It has a rather numerous native population of the T'linkit nation. It contains no especially high mountains, and its general features are those of a densely-wooded country of moderate height but of undulating or even rugged surface, bare of snow in summer, and abounding with fish and game. The timber, as remarked by Vancouver, is in many places of good quality and large growth.

The Chichagoff group, inclosed between Cross Sound and Peril Strait NW. and SE. and Chatham Strait and the ocean NE. and SW., has a roughly quadrilateral form about forty-five miles in length NW. and SE., while its breadth averages about thirty-eight miles.

From Point Augusta nine miles NW. ½ N., according to Tebienkoff, but a considerably greater distance if later reports are correct, is situated Point Couverden,* a moderately elevated tongue of land, extending from its southern and eastern extreme nearly two miles in a westerly direction, being about half a mile wide, and separated from the continental shore by an unexplored passage. Behind the point the immediate shore appears low and densely wooded, while it is backed by steep, rather barren, high mountains, capped or streaked with snow. A view of the high land as seen from a point twenty miles SE. by S. from Point Augusta is given on U. S. Hydrographic Chart No. 225.

The strait at Point Couverden was, in 1869, estimated by an officer of the U. S. Coast Survey to be seven miles in width in a direction about E NE. from the point to the Admiralty shore. The impression received by the party from viewing the locality was to the effect that the channel between latitude 57° 55′ and 58° 32′ is really wider than it is represented on any of the charts. With an uncertainty in the longitude of ±1′.5, the geographical position of Point Couverden is, approximately,

Latitude	58° 12′ N.
Longitude	135° 05′ W.

About a mile southward from Point Couverden Vancouver represents a high, barren, rocky islet, while a clear passage between it and the shore is indicated on Russian Hydrographic Chart No. 1396. On Russian Hydrographic Chart No. 1494, British Admiralty Chart No. 2431, and others derived from them, this island is omitted. On the other hand, U. S. Hydrographic Office Chart No. 882 indicates a small rocky islet one and a quarter miles SE. by S. from the eastern extreme of Couverden, called Rocky Island on Chart No. 225, and to the south and southwest two larger wooded islands, sheltering the entrance to Swanson Harbor, outside and to the southward from which are a number of rocks or rocky islets extending nearly a mile off shore. One of these was perhaps intended for the island nearly in mid-channel of Icy Strait, about five miles southwestward of Point Couverden, of Russian Hydrographic Office Chart No. 1494, British Admiralty Chart No. 2431, (editions previous to 1882,) named Spasskaia† Island on Chart No. 225 by Meade. This island is not found on Tebienkoff's Chart VIII, and according to the report of Lieutenant Hanus does not exist in the locality mentioned. The name has been transferred on the revised edition of Chart No. 225 to a small island on the south shore of Icy Strait, about two miles westward from Spasskaia Harbor.

A more important correction to the charts is the discovery and location of a serious danger, named by the U. S. Navy *Hanus Reef*, after the officer who reported it. The rock indicated by Tebienkoff in mid-channel between Point Augusta and Point Marsden may have been intended for the same danger, but it is placed by Tebienkoff much farther south. *Hanus Reef.*

Hanus Reef lies three miles SE. by E. ½ E. from Point Couverden. At low water the highest part was seven or eight feet out of water. It is covered at one-third flood. It consists of a patch about a quarter of a mile in extent including a series of detached rocks. At certain stages of the tide a two or three knot current is said to set directly upon the reef, which should therefore not be closely approached. From the reef Point Retreat bore N. 28° W., Point Couverden N. 58° W., Point Augusta S. 51° E., Point Sophia S. 61° W., Point Whidbey N. 39° W., and a rocky islet near Couverden N. 62° W. Until these points are correctly located the absolute position of the reef must remain unknown, but its relative position, as above, will enable the navigator to avoid it.

West from the southern extreme of Couverden Island an indentation of the mainland forms Swanson Harbor of Meade. It is about seven cables long W. ½ N. and E. ½ S. and five cables wide, with rocky shores and a stream at the head. It is sheltered by Couverden Island to the NE. and Astley and Entrance islands with their associated rocks to the SE. Between these is a clear channel two miles long in an E. and W. direction and half a mile wide. **Swanson Harbor.**

Between the mainland and Couverden Island is an unexplored passage containing an islet and a number of *rocks* which uncover at low water. It is probably not navigable.

Between the mainland and Astley Island and Astley and Entrance islands are passages which are obstructed by *rocks and shoals* and should not be attempted.

* Named by Vancouver after his ancestral seat.

† Erroneously Spaskai.

On the northwestern shore of Swanson Harbor are the remains of a deserted Indian village. On the southwest part of Couverden Island, facing the channel, is a village of T'linkit Indians which is occupied only in summer. Wood is cut here for steamers. The shores of the islands and bay are moderately low and wooded.

The entrance to Swanson Harbor is marked by Rocky Island before referred to. It should be passed to the southward. From the eastern part of Entrance Island *rocks* make off three cables. The course in is in mid-channel about **W.** ½ **N.** into the center of the cove at the head, with the passage between the mainland and Astley Island bearing about **SE.** by **S.**, where anchorage in eight fathoms, soft sticky bottom, may be had. This harbor is represented by a sketch on U. S. Hydrographic Office Chart No. 882, published in January, 1881.

LYNN CANAL.

The entrance to this important inlet is situated between Point Couverden and the rocks off the southern point of entrance of Funter Bay. The islands represented near the middle of this entrance on most of the charts do not exist in that position, but are much closer inshore, leaving the channel-way clear. This arm was named by Vancouver, and he remarks of it, "the upper portion of this arm approaches nearer to those interior waters of the continent which are said to be known to the traders and travelers from the opposite side of America than we had found the waters of the North Pacific penetrate in any former instance."

This fine body of water extends from mid-channel between Point Couverden and the Admiralty shore in a **NW.** direction about sixty miles, of which the last twelve are divided into two nearly parallel branches by Point Seduction. The whole has a greatest width of about twelve miles and an average width of six. Throughout its extent it is nearly free from impediments to navigation. By reason of the fact that the glaciers terminate some distance inland from the shore, resulting from the more gradual slope of the Alps on the southwest and the coast ranges on the northeast shores, this canal is free from the floating miniature bergs which, at times, obstruct Cross Sound and Gastineau Channel, although the latter are a degree southward of the head of Lynn Canal.

The vicinity of the passage is in many places densely wooded with large evergreen trees. Deposits of minerals, especially iron, have been observed in extraordinary masses, and the shores and river tributaries are inhabited by a large population of very warlike, independent and untrustworthy savages belonging to the T'linkit stock.

The waters of the northwestern extreme of Lynn Canal are brackish or almost fresh, and Vancouver's parties referred to a "constant" current from the northward, indicating that, at the surface at least, the flood-tide is not invariably perceptible. Except near the mouths of streams the depth of water is very great. In this vicinity the marks of forest fires have been observed—a certain indication of a drier summer climate than at Sitka. When rounding Point Retreat from the **SE.** a large glacier, called **Eagle Glacier**, is visible in a direction **N. 15° E.**, proceeding from high mountains eastward from Berners Bay, and a smaller one eastward from the first. Nineteen others of various sizes may be seen in various parts of the shore throughout the length of the canal, and no more, although some exuberant tourists have claimed as many as two hundred for the borders of this sheet of water.

According to the U. S. Navy Point Retreat lies **N.** by **W.** ten or eleven miles from Point Couverden, and a *reef* is said to extend a third of a mile northward and westward, so that it is advisable to pass this point at a distance of not less than half a mile.

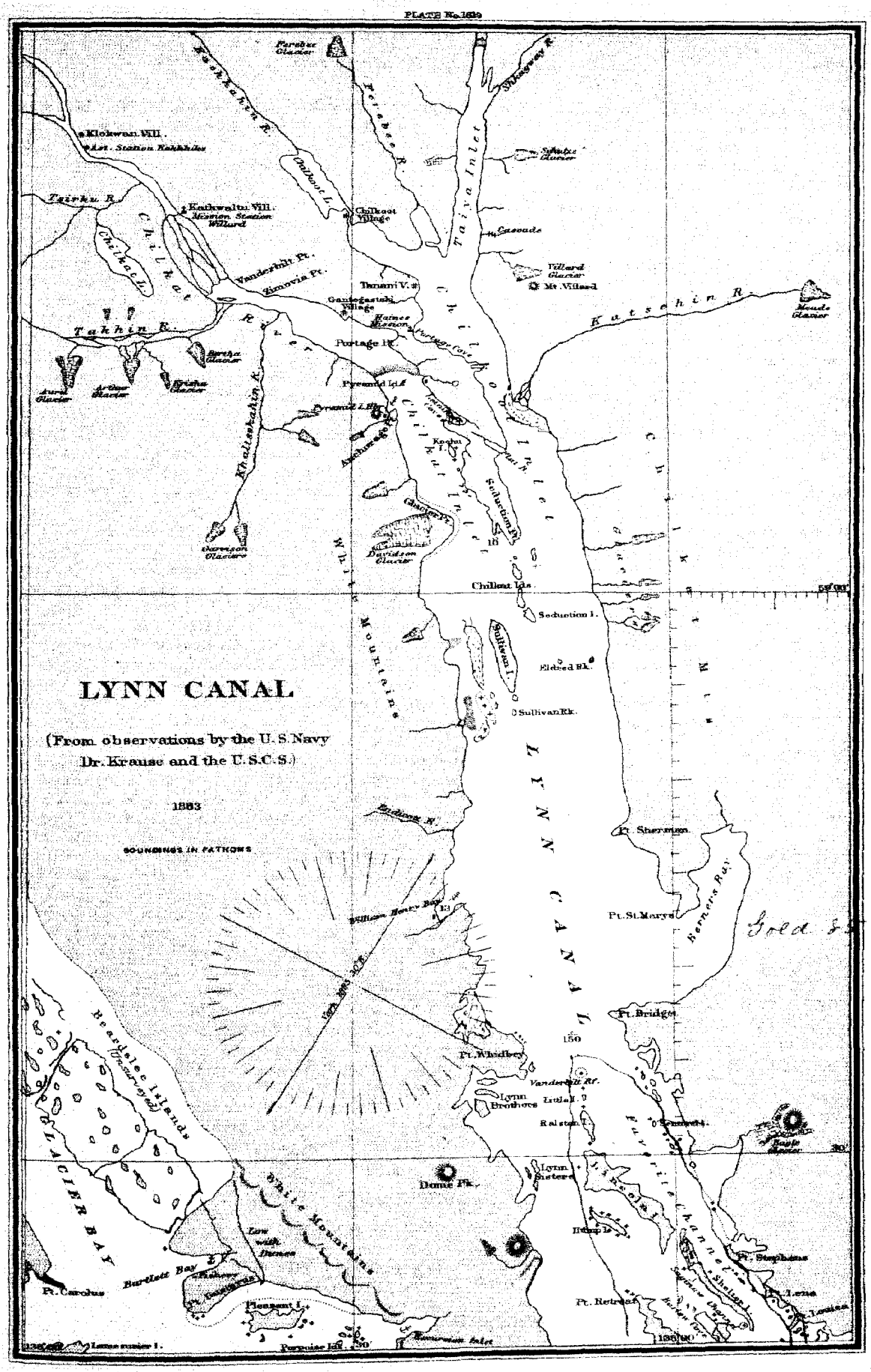
NE. by **N.** ½ **N.** from Point Augusta and about **SE.** from Point Retreat is **Lone Mountain** of Meade, who speaks of it as resembling a volcano and forming an excellent land-mark for entering Stephens Passage.

Two miles **N.** by **W.** ¼ **W.**, according to Meade, from Point Retreat is the southeastern end of an island named by him **Lincoln Island**, an irregularly-shaped long narrow island six and a half miles long in a **W NW.** and **E SE.** direction with a greatest width not much exceeding a mile, from the northern end of which a line of islets and *reefs* extends nearly five miles in a direction nearly **NW.** by **N.** Lincoln Island is wooded and comparatively low. Its southern side is arched to the northward, and off the middle of this bight, about a mile, lies **Hump Islet**,* high and timbered, of elongated form and small extent, with foul ground along its northern and southern shores extending off a cable or two.

The **Lynn Sisters**† are a group of three small islands and a rock, which lie about **N NE.** from Dome Peak on the western shore of Lynn Canal, close to the shore, with a small narrow bight southward from them. The northern end of Ralston Island bears about **N.** by **E.** ½ **E.** from them. Ralston Island lies **NW.** by **N.** about a mile from the northern extreme of Lincoln Island, with a rock in the passage between, which should not be attempted. Several rocks and an islet, called Little Island by Lieutenant Symonds, continue the series which terminates in *Vanderbilt Reef*. This patch was discovered by Captain Vanderbilt of the Northwest Trading Company's steamer *Favorite*. It is **NW.** by

* Named by Meade.

† Named the **Sisters** by Meade, a name which has been repeatedly used within a short distance of them and is better modified as above.


LYNN CANAL
(From observations by the U.S. Navy
Dr. Krause and the U.S.C.S.)
1883
SOUNDINGS IN FATHOMS
Klukwan Vill.
Kathwaltu Vill.
Chilkoot Village
Tsirku R.
Takhin R.
Chilkat River
Chilkat Mountains
Chilkat Inlet
Chilkat Lake
Chilkat Ls.
Portage Pt.
Haines Mission
Portage Cove
Katsehin R.
Taiya Inlet
Skagway R.
Pyramid Ld.
Pyramid I.
Seduction Pt.
Seduction I.
Sullivan I.
Eldred Pk.
Sullivan Rk.
Pt. Sherman
Pt. St. Marys
Berners Bay
Pt. Bridget
Pt. Whidbey
Lynn Brothers
Ralston I.
Dome Pk.
Lynn Canal
Favorite Channel
Pt. Stephens
Pt. Retreat
Pt. Louisa
Glacier Bay
Bartlett Bay
Pt. Carolus
Pleasant Is.
Porpoise Is.
Low with Trees
White Mountains
Nautical Miles

N. from Little Island about a mile. Some of the rocks uncover at half tide and extend half a mile or more in a NW. by N. direction. Coming from the southward it is not in the way, but coming from the northward bound for Favorite Channel, after passing Point Bridget, Little Island should be kept well open westward from the northern end of Ralston Island until the former bears SW., which will clear the reef. If bound for Chatham Strait steer a course to pass about a mile eastward of the islets near Point Whidbey (or Grant) until Little Island bears E NE., which will clear the reef.

This part of Lynn Canal is represented in a most erroneous manner on all charts prior to 1881; it is still imperfectly known, but U. S. Hydrographic Chart No. 883 and British Admiralty Chart No. 2431 (edition of 1882) give a much better idea of it than anything previously published.

Between the series of rocks and islands extending to and including Lincoln Island and the shore of the mainland northeastward from them is a clear passage, forming part of Favorite Channel. The main shore from Point Bridget southeastward to Point Stephens is much indented; the largest bight leading toward the stream from the Eagle Glacier, the sediment from which has made it entirely shoal. This bank extends SE. by S. along this shore nearly to Point Stephens, for which reason it should not be approached except with great caution and the lead kept going. Northwestward along this shore from the bight above mentioned lie numerous islets, mostly with rocks about them, and extending parallel with the axis of the passage. The most westerly of these is Sentinel Islet, about two miles SW. from the main shore, with *a reef* extending half a mile northwestward from it. The others are Bird, Gull, Benjamin and North islets, (besides others not named,) named by the U. S. Navy, and whose size and exact position can only be said to be approximately determined.

Clearly visible from Chatham Strait, and projecting from the western shore of Lynn Canal about NW. by W. five to seven miles from the NW. end of Lincoln Island, is **Point Whidbey.*** This point forms a rather remarkable high, steep, wooded promontory whose face is about three miles in length in a N NW. and S SE. direction, and which projects from the western shore of the canal to the extent of about three miles in an E NE. direction. In this manner are formed on either side of the promontory open coves, in the southern of which are three islets of small extent, which have received from Meade the name of **The Brothers**. Off the SE. extreme of the promontory is an islet of small extent, and there are three or four more close in to its northern face. In this vicinity Vancouver's party obtained a latitude of 58° 35′ N. as the result of meridian observations. Three miles NE. from the point above indicated, nearly in mid-channel, no bottom was obtained with one hundred and fifty fathoms of line.

Seven and a half miles N NW. from the NW. extreme of Lincoln Island, according to Meade, lies **Point Bridget**, named by Vancouver, low and wooded, and forming the SE. point of entrance to **Berners Bay** of Vancouver, a large sheet of water extending about nine miles from Point Bridget in a N. by W. direction with an average width of three miles. A stream comes in at the head of the bay; the NW. point of entrance, named by Vancouver **Point St. Mary's**, lies NW. ¾ N. four and a half miles from Point Bridget, like which it is low and wooded, while its axis rises inland to mountains covered with snow, attaining a considerable height, and constituting a part of the coast ranges which have been repeatedly alluded to. **Berners Bay.**

From this point about five miles NW. by W. lies **Point Sherman**, named by Meade, apparently low and wooded, from which the northeastern shore of Lynn Canal extends, high, steep and rocky, at the base of the imposing mountains above mentioned, some twenty miles in a NW. by N. direction.

From Point Whidbey in a northwesterly direction the shore extends compact, firm, and chiefly composed of cliffs with a few small coves having shingle beaches—the rock being a fine variety of slate and the shingle suitable for paving-stone. Behind the shore the land rises in lofty snow-capped mountains, forming part of the coast ranges.

About seven miles NW. from Point Whidbey is **William Henry Bay**, named by the traders. This bay is about three-quarters of a mile long and four cables wide N NW. and S SE., and protected from all winds except those between N. and NE., affording good anchorage in thirteen fathoms, soft bottom. It is free of known dangers, has a plentiful supply of fresh water on the west side of the bay, but wood is only procured with difficulty. Lieutenant Hanus sounded out the bay and made a sketch of it in 1880. This sketch has been published on U. S. Hydrographic Office Chart No. 882 of 1881. The point east from this bay is low; the opposite shore is high with several streams. A good-sized stream, called **Beardslee River** by the U. S. Navy, comes in at the head of the bay. The shores are represented as rocky throughout. The following directions are derived from the U. S. Naval Hydrographic Notice No. 97 of 1880.

DIRECTIONS

FOR WILLIAM HENRY BAY.

Keep from one-half to three-quarters of a mile from the western shore of Lynn Canal until abreast the entrance, which otherwise is difficult to recognize. The highest mountain in this vicinity,

* Named by the U. S. Coast Survey in 1867, and which is Point Grant of Meade in 1869.

which has a rounded bald top without trees, is just northward and westward from the entrance. When the bay is well open keep in mid-channel of it until the eastern point of entrance is passed, when anchorage may be had in nine to thirteen fathoms water, soft muddy bottom.

There are convenient facilities for watering, and in 1880 wood could be had here.

Nearly four miles westward from this bay **Endicott River,** named by the U. S. Navy, comes in from the westward, fifty feet wide at its mouth, which is filled with sand bars. This small stream is only worthy of notice on account of the paucity of rivers in this part of the coast. From the mouth of the river the shore trends about two miles in a northerly direction, from which in a **NW.** by **N.** ½ **N.** direction about five miles lies the **SE.** extreme of **Sullivan Island,*** which extends some four or five miles hence in a **NW.** direction with a width of about a mile.

Between the southeastern extreme of Sullivan Island and a point which is formed by a delta at the mouth of a stream making out from the western shore of Lynn Canal, about two miles **SW.** from the island, is the southern entrance of a passage about a mile wide in its narrowest part. This entrance is nearly closed from side to side by *a shoal,* and should not be attempted until more is known. The representation of Sullivan Island on most charts appears to be too long. From its southern end in a southeasterly direction are two islets, of which one is omitted by all the charts except that of Vancouver. One of these islets, according to meridian observations by Whidbey, is in latitude **58° 54′ N.** The southernmost islet received the name of **Sullivan Rock** from the U. S. Hydrographic Office in 1869.†

Another low delta point is formed by a glacier stream **SW.** from the northern point of Sullivan Island, while about three miles from the islet at the southern end of the island, in a **N NE.** direction, lies *Eldred Rock,* about four miles **SE.** by **S.** from the southernmost islet off the end of Point Seduction. It is omitted on some charts and misplaced on others. It is a bare rocky islet, and was located and named during the U. S. naval boat expedition to Chilkat in 1880.

NE. by **E.** ⅛ **E.** about two miles from the northern end of Sullivan Island is **Seduction Islet,** above referred to, of small extent, low, rocky and wooded. It was occupied for magnetic dip, angles and bearings, by the U. S. Coast Survey in 1880. Between this and the end of Point Seduction are four or five rocky sparsely wooded islets, making a group more than two miles in extent **N NW.** and **S SE.,** which has been named the **Chilkat Islands** by the U. S. Navy. On the eastern shore, extending from the head of the canal southward to Point St. Mary's, is a high rugged chain of precipitous mountains, named the **Chilkat Mountains** by the U. S. Coast Survey in 1879.‡ Those of the opposite shore have been called by the U. S. Navy the **White Mountains.** From the station on Seduction Islet the middle of the Davidson Glacier bears **W.** ½ **N.** and a smaller one south of it **SW.** by **W.** ¾ **W.** Between the expanded foot of the Davidson Glacier and the water's edge, **N NE.** from it, is situated **Glacier Point,**§ low and composed of debris, covered with trees, off and around which *a shoal* extends along the shore having an extent of half a mile or less in width. This is due to debris brought down by a glacier stream proceeding from the glacier which approaches the shore within a quarter of a mile. This has received from the U. S. Coast Survey the name of the **Davidson Glacier,** having been observed by Assistant Davidson in 1869. From Seduction Islet **NW.** by **N.** ½ **N.** about two miles lies the southern end of **Point Seduction** of Vancouver.‖ The southern part of this point is composed of rather low rounded hills covered with stunted brown-looking trees. The point extends about twelve miles in a northerly and westerly direction, dividing the head of Lynn Canal into two nearly equal inlets. The northern portion of the point is low, narrow and nearly flat, affording an easy portage from the head of one inlet to that of the other. Point Seduction is quite narrow, probably not exceeding two miles in width anywhere.

The inlet westward from Point Seduction has been named by Meade **Chilkat**¶ **Inlet,** from the river of that name, which it receives. This inlet is about ten miles long in a northwesterly and southeasterly direction and averages about three miles in width.

According to Lindenberg's reconnaissance,** northward from the extremity of Glacier Point and on the shore of Point Seduction a point, called by him **Point Shketlina,** makes out with rocks about its base, but with ten fathoms close to them.

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* So named by Meade, after the master of the American schooner *Louisa Downs,* wrecked here in 1867. The roadstead where she anchored and was lost was named by Meade **Rescue Harbor,** in remembrance of the six persons rescued by the *Saginaw.*

† Directory for Bering Sea, p. 43.

‡ They have also been called the Chilkoot Mountains by Krause.

§ Of Meade; **Lohtianoi** or **Icy Point** of Lindenberg.

‖ **Soblazna** of Tebienkoff; **Seduction Tongue** of Davidson.

¶ This name has received various spellings, such as **Chilkaht, Chilcat, Tchillkat, T'silkat,** &c., river, inlet, mountains, islands, or Indians. A careful inquiry made in 1880, by Mr. Marcus Baker, of the Coast Survey, resulted in the belief that **Chilkat** was the phonetic, most correct and simplest spelling.

** It must be borne in mind that the charts of Lynn Canal, especially the northern part of it, are still very imperfect. The best is that which resulted from the reconnaissance of the U. S. Navy in 1880, published as U. S. Hydrographic Chart No. 883, which has since been copied on to that part of U. S. Hydrographic Office Chart No. 225, of 1882, and British Admiralty Chart No. 2431, edition of 1882. Even this, however, is known to be considerably in error about the mouth of the Chilkat River. Some useful data have been published by Dr. Arthur Krause, who explored in this vicinity recently, and has given small maps of the rivers which fall into both these inlets, which add much to our knowledge of them, and have enabled us to correct to a certain extent the inlets about the river mouths.

The water near the eastern side is deeper than on the western shore, where, in fact, it is frequently shoal some distance off, and, according to Lindenberg, even shows dry spots at low water.

NW. ½ W. from this point about a mile is the southern end of **Kochu Island.*** It is a moderately elevated wooded island with sandy shores, a small islet northward from it close-to, and some rocks and small islets near its southern extreme. It extends about half a mile **NW.** and **SE.**, with a width of a quarter of a mile. On Russian Hydrographic Chart No. 1396, U. S. Coast Survey No. 701, and Tebienkoff, No. VIII, this island is correctly represented as being near the eastern shore of the inlet, which is about half a mile distant, while the nearest point of the western shore is nearly two miles away. The English Admiralty Charts, Meade and others previous to 1881, represent the island incorrectly placed in the middle of the inlet, or even nearer the western than the eastern shore.

NE. by **E.** about seven cables from the northern end of Kochu Island lies the entrance to **Seal (Nerp) Cove** of Lindenberg, of very small extent, with an islet and some bare rocks about its entrance and no soundings given.

A mile and a quarter **NW.** from this cove lies **Letnikoff Cove,** with an islet at its southern point of entrance, and from which the shore of Point Seduction trends about **W.** by **N.** nearly four miles to the beginning of the flats and some two miles farther to **Portage Point.** From the head of Letnikoff Cove a flat extends to Flat Bay on the other side of Point Seduction. The Krause map represents two streams, heading close together, one of which falls into each bay, so that they are nearly connected by water. A cannery is said to have been established here recently. In this vicinity was formerly an Indian settlement.

NW. by **W.** ¾ **W.** about two miles from the northern end of Kochu Island lies **Pyramid Island** of Meade, **Pestchani** or **Sandy Island** of the Russians. The latter name is so frequent in this region as to have lost all distinctiveness, and therefore the name proposed by Meade has been preferred for this island, which is of some importance from a hydrographic stand-point.† It is of peculiarly pyramidal profile when seen from **S SW.**, and is of very small extent; it is a sand dune, with some grass upon it, about two hundred feet high, somewhat elongated **NE.** and **SW.**, with a bank about it, so that over three fathoms is not to be had within a couple of cables from it. This bank is somewhat extended to the northward toward a similar shoal making off from the shore in an opposite direction.

Between the island and the shore in this direction the deepest water was thirty-one and a half feet at half tide in 1838, according to Lindenberg, and at present it is mostly much shoaler. In this vicinity the rise and fall of the tides is about sixteen feet. Pyramid Island is situated nearly in the center of the rounded termination of the inlet, being just about a mile from either shore and from the bar. The beach is strewn with large stones.

The geographical position of Pyramid Island was determined by the U. S. Coast Survey in 1869 to be

Latitude	59° 11′ 43″.0 **N.**
Longitude (in arc)	135° 27′ 04″.5 **W.**
Longitude (in time)	9^{h} 01^{m} 48^{s}.3 **W.**

Sketch charts of this part of the inlet and the mouth of the river are to be found on U. S. Hydrographic Chart No. 883 and Russian Hydrographic Chart No. 1396; Meade gives a view of Pyramid Island from the **S SW.** on chart No. 225.

About a mile southward from Pyramid Island, on the western shore, is situated **Pyramid Island Harbor,**‡ named by Meade, and forming the usual anchorage. It is hardly a cove, but consists of a concavity in the general shore-line about a mile long **NW.** and **SE.** and indented to the extent of a third of a mile, mostly occupied by a bank on which may be had, according to Meade, seventeen to twenty-five fathoms of water over a bottom of stiff blue mud. The discrepancies between Meade's sketch, which is evidently crude, and Lindenberg's delineation of the same vicinity are very great.

The north extreme is **Green§ Point**; the south extreme is the bed of an old glacier, low and composed of broken stones which from a distance appear like sand. It is called **Anchorage Point‖** by the Russians. The anchorage here is said to be better than out in the inlet, but the tidal currents, especially with a contrary wind, combine to make the berth uneasy. The bottom of the harbor is a "pot-hole" about fifteen fathoms deep, from which it shoals rapidly in all directions. Over the bar joining the heads seven fathoms can be carried. The bottom is blue mud and sand. The land about the harbor is very rugged and alpine in character, with considerable timber, but much less wooded than the land to the southward. No glaciers are in sight from the anchorage, though there is a small one immediately

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* Named in 1838 by Lindenberg. This is the **Ventosa Island** of Meade in 1869, and is said to be called **Gla-hûts** by the Indians.

† It has also been called **Farewell, Stony** and **Observatory Island.** The Indian name is **Shla-hatch.**

‡ It is one of the numerous anchorages called **Labouchere Bay** by the Hudson Bay Company's traders, because the steamer of that name used to anchor there.

§ **Zelonl** of Lindenberg or **Indian Point** of Meade.

‖ **Yakorni** of Lindenberg and **Sandy Point** of Meade.

back in the mountains whose waters are discharged over a moraine nearly a mile in extent a short distance E. from the harbor. Mount Labouchere, directly back from the harbor, rises so abruptly as to subtend an angle of more than 30° as seen from the shore of the harbor. It is doubtless much higher than the fifteen hundred feet assigned to it by Meade.

Anchorage may be had off the bar in fifteen fathoms one mile NW. by W. from Pyramid Island, where the holding-ground is excellent, but the vessel tails into three fathoms with flood tide or southerly winds. In summer the water here is perfectly fresh. In this vicinity the tide rises about sixteen feet; it is H. W. F. and C. at 0^h 30^m, and the variation of the compass, as reported by Meade, is thirty-one degrees easterly in 1868, against thirty-five degrees in 1838 according to Lindenberg.

Pyramid Island Harbor may be recognized by Pyramid Island, which is bare of trees, and is the only island away from the shores of the inlet north of Kochu Island, (except a small one immediately adjacent to the latter,) and which bears about due north from the harbor, and also by Anchorage Point, which looks like a sand-spit. The shore may be approached and the harbor entered without apprehension; after passing the seven-fathom bar at the entrance anchorage may be had in fifteen fathoms. The great height and steepness of Mount Labouchere will make the shore at the head appear nearer than it is in reality. A cannery has been established here.

Less than a mile above Pyramid Island the McClellan flats commence, and no vessel should proceed northwestward from the island without a local pilot. Over the flats it is difficult to find a channel with water enough to float an ordinary ship's launch.

No quicksands were discovered in the flats, where Indians were fearlessly wading, spearing salmon, when the U. S. naval exploring party visited the place in 1880.

From Pyramid Island Harbor about W. by N. is **Portage Point**, which is about a mile southward and westward of the beginning of the portage across the head of Seduction Peninsula.

About two miles W NW. from Portage Point is **Ranche Point**, where the first Indian village* is situated on a grassy, wide, alluvial flat, having in the back-ground a bold granite peak, which is streaked above by landslides and wooded below. The village contained sixteen houses and one hundred and seventy-one people.

Westward from the village about seven miles and a half the river turns more to the northward around **Zimovia† Point**, where the river is a mile and a half wide with not over two feet in the channel, and two-thirds of the distance from the SW. shore composed of nearly dry flats.

Two miles from the village precipitous mountains rise two thousand feet on either side of the valley. The timber gradually changes as the river is ascended, evergreens giving place to deciduous trees and these to shrubs at ten or fifteen miles from the mouth. On the southern side of the river snow-capped rugged mountain crests are noticeable. About five miles from the mouth, on the southern side of the river valley, a river,‡ flowing from a glacier in the mountains south from Pyramid Island Harbor, comes into the Chilkat through a valley six miles long. A little farther up the **Takhin River** comes in from the W SW. through a broad valley. It receives the flow from several glaciers in the mountain range south of the valley, of which the easternmost has been named the **Bertha Glacier** by the U. S. Navy. This river extends westward about fifteen miles.

Beyond Vanderbilt Point the flats and sand-bars which hitherto have obstructed the river bed give place to numerous low, flat, wooded islands with shallow channels between them. The current becomes more rapid as the channel narrows and runs at times five or six miles an hour. The width of the river becomes less and its direction up stream more northerly.

The next Chilkat village, about five miles from Vanderbilt Point, is called **Katkwaltu**, (or Kutkwut-lu, meaning place of gulls,) contains eleven houses, and had in 1880 a population of one hundred and twenty-five. Here the valley of the river is about two miles wide, and the mountains on each side are very steep and about twenty-five hundred feet high. A missionary station called **Willard** is now situated at this village.

About three miles above this village the **Tsirku River** comes in from the south. It is a small stream, draining a good-sized lake named **Chilkat Lake**, which lies in the mountains between the Takhin River and the Chilkat. About a mile farther up on the left bank is the main Chilkat village, called by its inhabitants **Klu-kwan**. It has sixty-five houses and some five hundred and sixty inhabitants. Nearly west from the village is a fine peak, supposed to be about four thousand feet high, and called Chilkat Peak by the U. S. Navy.

Near this village was situated the observing station **Kohklux**, at which the U. S. Coast Survey observed the total eclipse of the sun August 7, 1869.

The geographical position of Kohklux is

Latitude	59° 23′ 41″.1 N.
Longitude (in arc)	135° 53′ 30″ W.
Longitude (in time)	9^h 03^m 54^s W.

* Known as **Tondustak** or **Yendestaka**; properly **Gan-te-gas-tak-heh**—that is, the "village on the east bank of the river."

† Named by Lindenberg in 1838. **Spuhn Point** of the U. S. Navy in 1880, not **Spuhn Point** of the same authorities near the south end of Lynn Canal.

‡ Khalzekahin of the Indians.

The magnetic dip was determined to be 75° 44′ on the thirty-first of July, 1869.

Large deposits of magnetic iron ore were discovered in this vicinity.

A short distance north and west the **T'lehini** (or Kluhini) **River** joins the Chilkat from the westward. The village may be considered at the head of navigation on the river, except for canoes. The river is supposed by Lieutenant Symonds not to rise during freshets more than two feet over its September level, which gives rarely over three feet in the deepest part of the main channel. Unfortunately the only map in existence which gives even an approximately accurate idea of these rivers and the head of Lynn Canal is the small sketch which is due to Doctor Arthur Krause. This itself makes no pretence to be more than a preliminary sketch. It therefore would be premature to attempt to describe these streams in detail, even were they navigable, for want of sufficient data. A few general remarks, however, may be useful to prospectors and travelers.

The **Chilkat River*** is a shallow stream about fifty miles in length **W NW.** and **E SE.**, which at its mouth is indicated to be about two miles in width. It enters the inlet in about latitude **59° 13′** according to observations by the U. S. Coast Survey. This mouth is so choked with sand-bars as to be practically unnavigable for anything except canoes, and the bar at low water appears as if dry clear across. The rise of tide in the inlet is sixteen feet at springs; about three miles up the river, at Zimovia Point, the rise is reported by Lindenberg to be five feet, and two miles farther up only one foot, at the same time when it is eight feet at the mouth; so it may be supposed that the stream falls seven feet in five miles and, consequently, when not filled by the backwater of the tide must carry but a very small amount of water. This idea is fully confirmed by the latest advices, and, in fact, from a glance at the Krause map it is evident that after the spring freshets the river must depend for its flow on the summer melting of some twenty glaciers, the surplus of four or five small lakes, and the local rain-fall of its narrow valleys, from which it is quite evident a large amount of water cannot be expected in this latitude.

Above the T'lehini River the Chilkat receives the **Tahini**, and some ten miles farther up divides into two parts, both heading to the westward. Here they nearly approach branches of a river called **Altsekh**, which from its position may well drain the northeastern part of the Grand Plateau glacier, the western extreme of which comes to the sea-coast near Mount Fairweather. If this be the case it would tend to explain a singular error into which Tebienkoff has fallen in representing the above-mentioned glacier as a river delta under the name of the Alsekh River. The real Altsekh of the interior must form part of the southernmost Yukon water-shed, and perhaps connects with the White River.

From the head-waters of the Chilkat a portage across a wide valley is made to the narrower valley of the **Krotahini** branch of the Altsekh which is ascended to its head, where the **Krotahini Pass** is situated, at a height of fifty-three hundred feet above the sea. Descending on the northern side the head-waters of another small branch of the Altsekh are crossed, and hardly a mile beyond them is **Silver Lake**, (Dana-aka of the Indians,) about four thousand feet above the sea. From this the declivity is very steep in a short distance, and the stream is fed by many glaciers from a range eastward from the lake. All this drains into the **West Kūssūa Lake**, a large sheet of water twenty-seven hundred feet above the sea. From this the **West Fork** of the **Kūssūa River** flows until it joins with the **East Fork** to form the **Lewis River**, by which, in conjunction with the **Pelly**, **MacMillan** and other rivers, the great **River Yukon** of the interior is formed.

CHILKOOT INLET.

Northeastward of the peninsula of Point Seduction is Chilkoot Inlet, somewhat narrower and longer than Chilkat Inlet, with which it is in general parallel. It derives its name† from an Indian village at its head, and is eleven or twelve miles long and from one to two and a half miles wide. About three miles from Point Seduction is **Flat Bay** of Krause's chart, called by the natives **Nakh**. It is a shallow cove of small extent from which low land extends across the peninsula in a westerly direction. About three miles farther is another smaller cove, marked at the north by two pinnacled points. The opposite shore is composed of lofty steep mountains, forming the Chilkat Range, with several glaciers in their gorges and one at the head of a moderately long narrow valley. The mountains culminate at the northwest in **Mount Villard**, three thousand seven hundred feet high by barometric measurement.

About two and a half miles westward from the last-mentioned cove is **Portage Cove**,‡ a small hardly indented cove, on which is the Indian village of **Deshu** and a white settlement containing a trading post and mission station, named **Haines** by the Presbyterian Board of Home Missions.

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*Named by the Indians inhabiting its banks; variously spelled Tchillkat, Tsilkat, Chilkaht, Chilcat, etc., by different authorities.

†It is the **False Chilkaht** or **Tschillkat Inlet** of Meade.

‡This was named **Portage Bay** by the traders, a usage followed by the U. S. **Navy** in their chart, but that name has been so often used in the territory, notably for the much finer and really important bay in Kupreanoff Island, that it seems better to denominate this place as a cove, which it really is, and nothing more. A sketch of it is found on U. S. Hydrographic Office Chart No. 882.

The cove derives its name from the fact that there is an excellent trail hence to the lower Chilkat village over which the Indians transport their small canoes. It is about seven cables in width, clear of rocks about the shores, in a **NW.** and **SE.** direction, and indents the peninsula about a quarter of a mile. The depth is from six to twenty fathoms above a bottom of soft mud. The anchorage is in ten or twelve fathoms about the middle of the cove, with the trading post bearing west about four cables. The northwestern part of the cove is more shoal with a bottom of rock and sand. No directions appear necessary. The tide rises and falls about eighteen feet.

Northwestward from Portage Cove is a small settlement, called **Tanani**, with three houses. The inlet here expands into two shallow bays, one trending in a westerly direction and the other more to the northwest. The former receives a short stream, navigable only for canoes, which drains the **Chilkoot** or **Akha Lake**. At the mouth of the stream is the Chilkoot village with eight houses and one hundred and twenty-seven inhabitants. The lake, of glacial origin, is about three miles long and one mile wide, and receives through a valley at its head the drainage of a glacier five or six miles to the westward. The other small bay receives a stream from the **Ferebee Glacier**, named by the U. S. Navy, which lies at the head of a valley six or eight miles long in a northwesterly direction.

N. by **W.** two miles from Portage Cove is the entrance to **Taiya*** **Inlet**. This is about thirteen miles long **N NW.** and **S SE.** and a mile and a half wide, which received the drainage of a number of glaciers through the **Taiya River**. There is reported to be plenty of water and good holding-ground up to the mouth of the river, which is navigable for canoes a distance of several miles. The valley of the Taiya receives the drainage of ten or twelve glaciers. It is about fifteen miles long. At this distance is a high but short pass called **Shasheki**, beyond which a stream, spreading into a number of little lakes and called the **Kotaska**, discharges into the **East Kūssūa Lake**, the latter forming the source of the **East Fork** of the **Kūssūa River**, which, joining with the western fork, forms the Lewis River, a principal affluent of the Yukon.

The natives at the head of Lynn Canal belong to the T'linkit race, who are said to call the region Kūnānā. Those of the interior belong to the Tinneh race, and in time past have not, except a few individuals, been permitted to reach the sea-coast by the T'linkit, who, possessing their trade, occupy the profitable position of middle men between the Tinneh and the whites.

The first expedition of which any record is accessible, and which crossed the divide from the head of Lynn Canal to the headwaters of the Yukon, was that of George Holt in August and September, 1875. His report was published in some of the western daily papers, but has not been accessible to the compiler. He determined the essential correctness of the Indian accounts of the country which they passed through on their annual trading parties to the vicinity of Fort Selkirk. The second expedition, under the protection of a naval party from Sitka, started in the spring of 1880, and some account of it may be found in the report of Captain L. A. Beardslee, U. S. N., (47th Congress, 1st session, Senate Ex. Doc. No. 71, pp. 59–65,) to the Secretary of the Navy. It was led by Edmund Bean and comprised nineteen individuals. No published report of their explorations has come to hand. A third expedition, including George G. Langtry, Patrick McGlinchey and two others, went out in 1881. A report of the experiences of this party, including some data in regard to the expedition of 1880, is published in the New York Herald, issue of December 21, 1881, dated at Sitka, November 10, 1881. More lately Lieutenant F. Schwatka has passed over the same portage and descended the Yukon to its mouth.

It appears that of the party of 1880 only three had the nerve to run the Grand Cañon, termed by Schwatka the **Miles Cañon**, the others making a portage around it to the lake below it. Thirty-five miles below the end of this lake the party entered the **Nas-a-thane** or No-Salmon River, which comes in from the south and east. They identified this with the Hotalingqua of earlier charts, which heads near the Taku River and has been mistakenly called the Tahko. This they ascended some thirty-five miles. In 1881 the party descended the Lewis River about thirty miles below the mouth of the Nas-a-thane, and ascended another which extends nearly parallel with the last named. This river is called by them the **Lyon**, and they traced it some two hundred miles, finding it navigable for light-draught steamers about eighty miles. A little gold was obtained along the whole length of this stream. This party returned to the Chilkoot Pass late in September without serious accident of any kind. The published report of the expedition is supposed to be due to McGlinchey.

The official report of the Schwatka expedition has not yet been received, but will doubtless add much to our knowledge.

The Yukon has been reached from the interior of British Columbia by several parties by ascending the North Fork of the Taku River and descending the Hotalingqua to its junction with the Lewis, supposed to be not far from **Fort Selkirk**. This fort was situated at the junction of the Lewis and Pelly rivers, near the head of navigation on the Yukon, which, according to the names in use, properly begins at this junction. Fort Selkirk was established by the Hudson Bay Company, but it interfered with the trade between the Tinneh and T'linkit, and the latter, enraged at the loss of their profits, boldly crossed the mountains in 1851, attacked and captured the fort by stratagem, leaving its garrison uninjured, and plundered and burned the establishment. In 1867 the explorers of the Western Union Telegraph Expedition, ascending the river, found the blackened chimneys of the fort still marking the spot.

*Named by the Indians. Variously spelled **Tayay**, **Tyya**, **Dehjah**, etc.

THE COAST OF ALASKA.

THE MAINLAND NORTHWARD FROM THE ALEXANDER ARCHIPELAGO.

II. CAPE SPENCER TO YAKUTAT BAY.

Northward from Cape Spencer* the shore trends in a generally **W NW.** direction about twenty-two miles to **Palma† Bay** of Malaspina. These shores are bold, rocky, and with a few islets close in. The shore-line appears rather compact, but presents several projecting knobby points with slight open indentations of the coast between them. The first of these is Astrolabe Point, about eleven miles **NW.** by **W.** from Cape Spencer. About six miles farther in the same general direction is another point, while **W.** by **N.** ¾ **N.** from Cape Spencer is **Icy Point,‡** the western extreme of Palma Bay. Icy Point is rather low, wooded, rising to a rounded dome toward its summit, which is formed by the termination of a ridge which extends to the southward from Mount La Perouse, east of the La Perouse glacier. The bay is unsurveyed. From six to ten miles off shore it appears quite open with a small knob or islet in its northern part. An islet is located here by Tebienkoff, and also one off the point, but none was observed in the latter position by the U. S. Coast Survey party in 1874. Seven and a quarter miles **SW.** from Icy Point the U. S. Coast Survey sounded in one hundred and ten fathoms, soft muddy bottom, May 14, 1874. The temperature of the surface of the sea at the same locality averaged **49°** F., but at a few fathoms below the surface was much colder, and about **32°** F. at the bottom.

Immediately behind the coast line up to this point is the southern portion of the range of **the St. Elias Alps,** which extends westward nearly to the Copper or Atna River and includes the highest uplifts yet known on the North American continent. The sides of these alps bear numerous glaciers, some of great extent, and a few reaching to the sea-beach itself. Among these is the **La Perouse Glacier,** named by the U. S. Coast Survey in 1875. This glacier has its névé situated on a saddle of the range some eight thousand feet above the sea, nearly due north from Icy Point, from which it descends very rapidly during the first three miles, forming a veritable ice cascade at one spot, where a black island of rock projects through it. For the remaining five or six miles of its length the slope is much more gradual, and a number of branches are received, from which are derived a number of lateral moraines. Near the sea it becomes confluent with the foot of the Crillon Glacier and ceases just at the beach, behind which its foot is seen black with mud, covered with stones and large fragments of rock and about two miles in width. The hills on either side near its foot are wooded; the alps themselves are snow covered or exhibit bare rock faces without vegetation, and present a spectacle of great grandeur. **Mount La Perouse,** on the flanks of which this glacier is situated,§ is, approximately, in

Latitude ..... **58° 34′ N.**
Longitude ..... **137° 00′ W.,**

and from observations taken in 1874 is believed to reach a height of about eleven thousand feet. Its apex inclines somewhat toward the southeast and is the highest crag of a massive and irregular uplift

* **Punta de Villalusenga** of De Mofras' general chart.

† **Bata de la Palma** on Chart No. 3, Atlas to Alcala Galiano's voyage, published in 1802; also called **Icy Bay** by some authorities, a name probably not found on any chart.

‡ Named by Tebienkoff in 1849, Chart VIII; in Russian **Lohtlanoi Point.** This has been called **Icy Cape** on several coast charts; a name also used a short distance westward near Mount St. Elias. It has also been called **Cape Forrest.**

§ Named by the U. S. Coast Survey in 1874, after Jean François de Gallaup de la Pérouse, the celebrated and unfortunate French navigator who explored these coasts in 1786.

rather than an isolated peak. It is distinctly visible from Granite Cove, Cross Sound, and from many miles away at sea to the SE. The ridge, of which it is one of the more conspicuous elevations, here trends NW. for more than six miles. On the NW. side of the saddle from which the La Perouse Glacier takes its start is **Mount D'Agelet,*** a small, sharp, conical ragged crag about nine thousand feet in height, four miles NW. from which is **Mount Crillon,**† rising nearly sixteen thousand feet, (the mean of many observations being fifteen thousand nine hundred feet,) and presenting from some points of view a sharp and pretty regular cone, while from others it appears merely as the most elevated part of a long sharp ridge or sierra. The foot of this ridge is buried beneath an immense glacier, whose foot extends in a direction directly transverse to the main axis of the glacier. One part extends E SE. and merges with the foot of the La Perouse Glacier; the other in a westerly direction to the NE. extreme of Lituya Bay. South from it, between Lituya Bay and the foot of La Perouse Glacier, is a range of low densely wooded hills with some level land seaward from them. This low land increases in width, N NE. and S SW., westward from La Perouse Glacier, the shore-line trending in a generally W. ¼ S. direction sixteen miles to Harbor Point at the entrance of Lituya Bay. **Harbor Point**, named by the U. S. Coast Survey in 1874, is the most southward part of the low land above mentioned, which from the east and southeast appears like a long low point with some small elevations upon it. In this way it is very liable to be mistaken for Cape Fairweather, which, on Tebienkoff's chart, is shown erroneously as visible from E. by S. ⅝ S. from Harbor Point, whereas it is really not visible until it bears SE. by E. ¼ E. La Perouse correctly represents the shore in the vicinity of Harbor Point as projecting southward, while Tebienkoff indicates an indentation here. The latter has unfortunately been followed on most charts. From the southward Harbor Point is very inconspicuous, but may be recognized by two small mammillated hills, densely wooded, which lie behind it, N. by E. and N NE., and have been called **The Paps**. Mount Crillon bearing NE., Cape Fairweather W NW., and the entrance of the harbor N. by E. ½ E., the U. S. Coast Survey sounded in 1874 in twenty-five fathoms. Codfish were abundant on this bank.

Harbor Point forms the eastern point of entrance to a remarkable bay named by the Russians **Lituya**‡ **Bay** from the name in use by the natives. The bay had been visited by Russian hunting parties before La Perouse, who found the frame of one of their baidars there, (though he did not recognize the fact,) but to him is due most of our knowledge in regard to it. Since then the bay has been entered by a whale ship commanded by Capt. E. P. Herendeen and by the U. S. Coast Survey schooner *Yukon* in 1874.

Lituya Bay.

Lituya Bay extends from its entrance about six miles in a NE. by N. ¼ N. and SW. by S. ¼ S. direction, with a width varying from two-thirds of a mile to two miles and an average of a mile and a quarter. At the point above mentioned two arms averaging less than a mile wide are given off, of which the northern one trends about NW. by W. ¼ W. about four miles and the southern one about E. ½ S. about four and a half miles. The bay therefore is roughly T-shaped. The entrance to the bay would naturally be about a mile wide, but is nearly closed by spits extending from the original shores. From the western angle of Harbor Point, forming the eastern point of entrance, and called **South or Iushnoi Point** by Tebienkoff, the spit is short, composed of shingle, large boulders and rocks, probably originally brought down by floating ice from the upper part of the bay. The spit extends south from the extreme end of the point one cable, and is nearly all bare at low water and bold-to except in one spot. There are several large high rocks, which must be bare at all tides. The largest one of these, nearly on the extreme southern edge of the spit, was named **Cormorant Rock** by La Perouse, whose representation of the entrance, however, very imperfectly represents the present condition of things. From Cormorant Rock W. by N. ½ N. three hundred yards, and in one with the west shore of Harbor Point at the top of the beach bearing NE. ¾ N., is *Passage Rock, a submerged rock*, the only one noticed by the Coast Survey party of 1874 on this side of the passage at low water. It is a single boulder with six fathoms alongside of it. Between this and the danger line SW. from it is the narrowest part of the entrance, which here does not exceed three hundred yards and carries four to six fathoms water, shoaling gradually from this submerged rock southwestward. The southwest margin of the channel, unlike that of the one above described, has no distinct boundary, but rapidly shoals to six feet at low water over a bottom strewn with large boulders, mostly visible from aloft at low water though not dry. It is evident that the eastern margin of the channel should be kept aboard. The bank of boulders and shingle extends clear around this point with an average width of a cable, but is narrower just within the entrance north and northwest from the point.

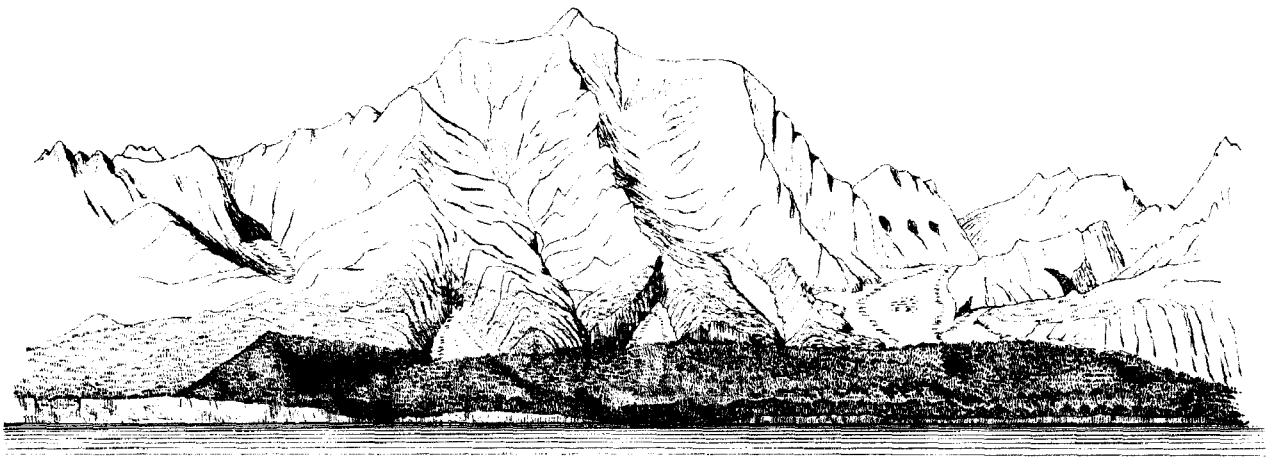
From the northwestern headland of the bay extends a long spit, called by La Perouse **La Chaussée**, first about a quarter of a mile in a SE. by S. ½ S. direction, then curving half a mile to the E SE. high-water mark is reached, from which to low-water mark a stretch of boulders and shingle extends two cables SE. by S.

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*Named by the U. S. Coast Survey, after the astronomer of La Pérouse's expedition.

†Named by La Pérouse in 1786, after a French Minister of the Marine.

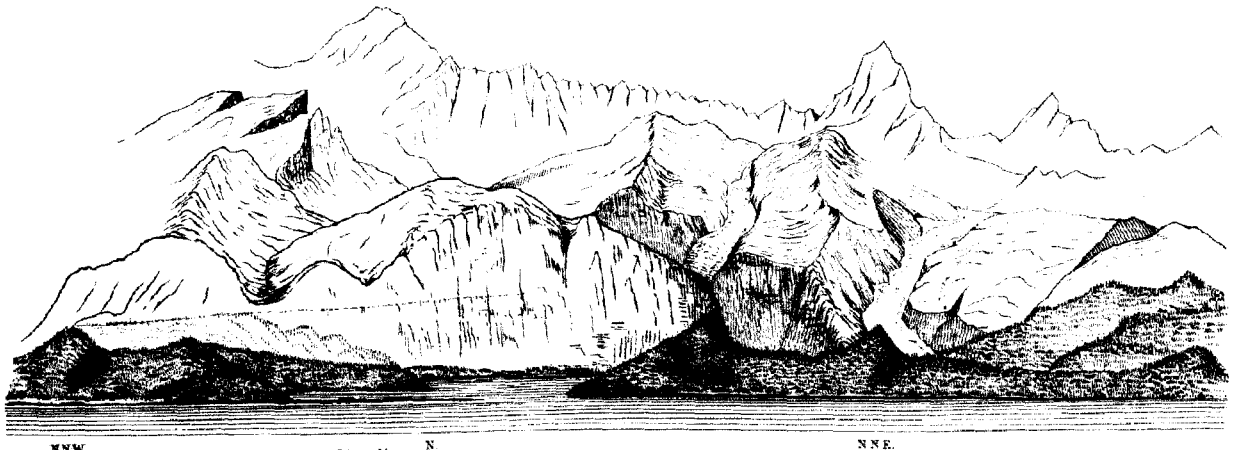
‡The original form is believed to be Ltit-tu-yáh, accented on the last syllable, which has been spelled Ltuya, Altuya, Alituya and Altona. It was called Port des Francais by La Perouse, Altua Basin by Grewingk, Ltua Bay by Galiano, and is known to some of the whalers as Frenchman's Bay. The name Rhoster has also been applied to it under a misapprehension.



NE. by N. ¼ N. NE. by E.

Mount Fairweather NE. ½ N.

(From a sketch by Asst. Dall in 1874.)



NNW. Lituya Mt. N NNE.

Entrance, Lituya Bay.

From a sketch by Asst. Dall in 1874.

Beyond this is an area covered with one to three fathoms at low water, which extends a little eastward from the south—north tangent of the eastern spit, and is strewed here and there with large boulders of which the tops in a few cases dry out at low water.

This spit, rising two to twelve feet above high-water mark, is nearly level. About half of it is grassy, the remainder composed of bare boulders. On the grassy part are two small clumps of low spruce trees. Near and **E NE.** from the southeastern clump was situated the astronomical station of the U. S. Coast Survey in 1874, thirty metres from the north beach and eighty-six metres from the south beach of the spit at high-water mark. From it the two ends of Cenotaph Island bear, respectively, **N. 29° E.** and **N. 43° E.** The astronomical position of the station was determined to be

Latitude	**58° 36′ 57″ N.**
Longitude	**137° 40′ 05″ W.**

The variation of the compass was **30° 13′** easterly in 1874, with a presumed annual *decrease* of about **1′**.

The variation in 1786 was **28°** easterly and the dip **74°**.

The range of the tides observed here was about six feet, May 15–19, 1874. La Perouse observed seven and a half feet range at full and change, and it was high water at one hour after the moon's passage.

The entrance of Lituya Bay and a reduced sketch of the whole bay are represented on U. S. Coast Survey Harbor Chart No. 742.

Northward from the middle of the spit and **E. ¾ S.** from the little hill at the **NW.** end of it is **Anchorage Cove**, about three cables in extent, and a convenient anchorage in five to seven fathoms water over a hard sandy bottom. Between this anchorage and the entrance the depth is from five to seven fathoms at low water.

On the opposite shore just within the entrance is another much smaller indentation with a sand beach, behind which is a small fresh-water pond. This cove is shoal and has only about fourteen feet of water in it some distance from the beach. Formerly there was a settlement, or at least some houses hereabouts, beyond which in the woods La Perouse observed a sort of cemetery or T'linkit place for the ashes of the dead. In 1874 there was nothing visible except a few tombs of wood near the beach. There were a few temporary huts on the **NW.** shore of Anchorage Cove. From outside the entrance of the bay, looking north into it, there are visible a flat spit in front; to the **N NE.** the Paps rising out of densely wooded lowlands; similar lowlands with small irregular hills gradually rising inland **N NW.**; at a distance of four or five miles on the **NW.** shore rises a precipitous rocky face to the height of several thousand feet, the mountain of which it is an exposure declining to the northward and westward. This is marked by a curious line or break in the rock, also visible in the topography westward from the precipice, which from the middle of the rocky wall dips to the **W SW.** at an angle of about five degrees. Behind this mountain, and dwarfing it, rises, beyond the arms at the head of the bay, the magnificent sierra-wall of alps which culminates elsewhere in the peaks of Crillon and Lituya. Down its precipitous slope five or six glaciers fall in true ice cascades to the water's edge. The syenitic rocks of which it is composed are bare of vegetation and indescribably ragged and broken. Opposite the rocky precipice previously described is another mountain, but more rounded and less high. Between these two is the gate to the two arms forming the upper bay, through which two of the ice cascades are visible from the sea outside the bay. (See view.)

Northward from the coves at the entrance the bay is diminished in width to three-quarters of a mile, northward of which it expands again to a width of about two miles, the water deepening at the same time to about one hundred fathoms, hard sandy bottom. Northward it slowly contracts until at its inner termination from which the two arms branch off it is again about a mile wide and very deep. Close to the shore La Perouse obtained seventy-nine fathoms. The shores of the arms are bold, the topography precipitous, a large glacier occupies the head of each arm—that to the westward is the foot of the Crillon Glacier. The water is extremely deep and frequently covered with small bergs detached from the glacial cascades. This ice floats down the bay with the tide, and with a favorable wind fragments reach the Pacific. There is some reason to believe that in winter the bay freezes over, and when this ice breaks up ice gorges occasionally form in the contracted portion near the entrance, backing up the waters of the bay behind them, as drift and evidences of flooding and washing were observed along the shores by the U. S. Coast Survey party in 1874 to a height of at least ten feet above high-water mark. The ravines show evidences of freshets when the snow melts, but in May were mostly dry, and little running water was observed, though there are a good many little ponds or lagoons of fresh water a short distance in from the beach in low places. Brushwood extends up to the snow line, and all the lower hills and levels are densely wooded with spruce, hemlock, willow, alder and birch. The water of the bay is discolored by melting ice mixed with mud derived from the glaciers.

On the northwest shore of the bay above the coves La Perouse and Tebienkoff indicate anchorage in several places with six to eighteen fathoms water. A mile and three-quarters about **N NE.** from

Anchorage Cove Russian authorities indicate a small boat harbor with two and a half fathoms water. As a rule the shores appear to be free from hidden dangers except very close in toward the beach.

Two and three-quarters miles **N NE.** from the entrance and nearly in the middle of the bay is **Cenotaph* Island**, named by La Perouse, who erected thereon a monument or cenotaph in memory of his officers and men who were lost in the bore or tidal wave at the entrance of this bay. This monument was situated on the southeastern point of the island, which has been termed **Cenotaph Point** on that account. This island is about three-quarters of a mile long **W NW.** and **E SE.** and half a mile wide. It is composed of a soft sandstone rock, depressed in the middle and rising somewhat less than one hundred feet to two knobs, one at each end. Its northern shore is marked by large rocks and rocky platforms extending two or three cables from the beach. The other shores are bolder without off-lying rocks. There are no boulders, erratic blocks or glacial markings on the rocks of this island, which is densely wooded. No trace of the wooden cenotaph remained in 1874.

At the narrow entrance in rough weather the breakers, except at slack water, extend clear across, and in moderate weather there are breakers on both spits. Slack water varies in length from twenty minutes to two hours, according to the character of the tide (which is complex) and the direction of the wind. In perfectly calm weather the incoming tide shows a bore† of considerable magnitude, and the same is true with the first part of the ebb, especially when the wind is from the southward. It is only practicable to pass through the entrance at slack water. Once in the tide-way, the vessel is carried through instantly and as if sailing down hill. The narrow part of the entrance is only about a cable in length, beyond which there is no danger.

The entrance to this bay, inconspicuous in itself, is easily recognized by the vicinity of Mount Crillon, Lituya Peak‡ at the head of the northwest arm of the bay, and Mount Fairweather. Cape Fairweather from the southeastward has the appearance of a low-cut slipper seen in profile; on the east side of the entrance the two Paps form an excellent mark.

SAILING DIRECTIONS

FOR LITUYA BAY.

To Enter.—When off the entrance bring the top of the easternmost rounded low woody hill, on the west side of the entrance of the bay, to bear **N NW.** and keep on that course until within the entrance about two cables, when the course will be about **W NW.** for Anchorage Cove, where anchorage will be had in the middle of the cove in five and a half or six fathoms, the eastern clump of spruce trees on the spit bearing about **SW.** by **W.** No attempt should be made to enter with a steamer except at slack water, and sailing vessels are advised to wait for slack water of ebb tide.

The least depth on the above course in the narrow part of the entrance is six fathoms at low water, and it lies at about the eastern third of the width of the passage.

To Leave the Bay.—Take the end of an ebb, or the slack water immediately after high water, and steer **SSE.** to pass one-third of the way from Cormorant Rock toward the breakers off the long spit.

A course **S. ½ E.** in the western third of the passage, as recommended formerly, carries nearer to the most dangerous breakers and clears only four and a half fathoms water.§

This bay, as described by La Perouse, is one of the most extraordinary places in the world. It is in fact a sort of Yosemite Valley, retaining its glaciers and with its floor submerged six or eight hundred feet. The upper part has been only approximately surveyed, but from the cursory observations made in 1874 it is evident his chart is in the main correct.

There are few fish, except halibut, in Lituya Bay; but wild animals, birds and seal appeared quite abundant in 1874. There is no permanent village here, and perhaps never has been, but parties of natives going north or south put in here to camp quite frequently. Strawberries and numerous other kinds of berries are plenty in their season, and in June wild flowers are abundant.

NW. ½ W. about two and a half miles from the outermost projection of the western Lituya spit is the mouth of the **Huagin River**, a small stream called Rivière aux Saumons by La Perouse. During the fishing season there is an Indian camp here.

About sixteen miles **NW.** by **W. ½ W.** from Harbor Point is **Cape Fairweather**;‖ between the two the coast curves inward slightly, forming a shallow bight with a shore composed of boulders, the **Castilla Bay** of Malaspina and De Mofras' atlas; the narrow strip of low land between it and the

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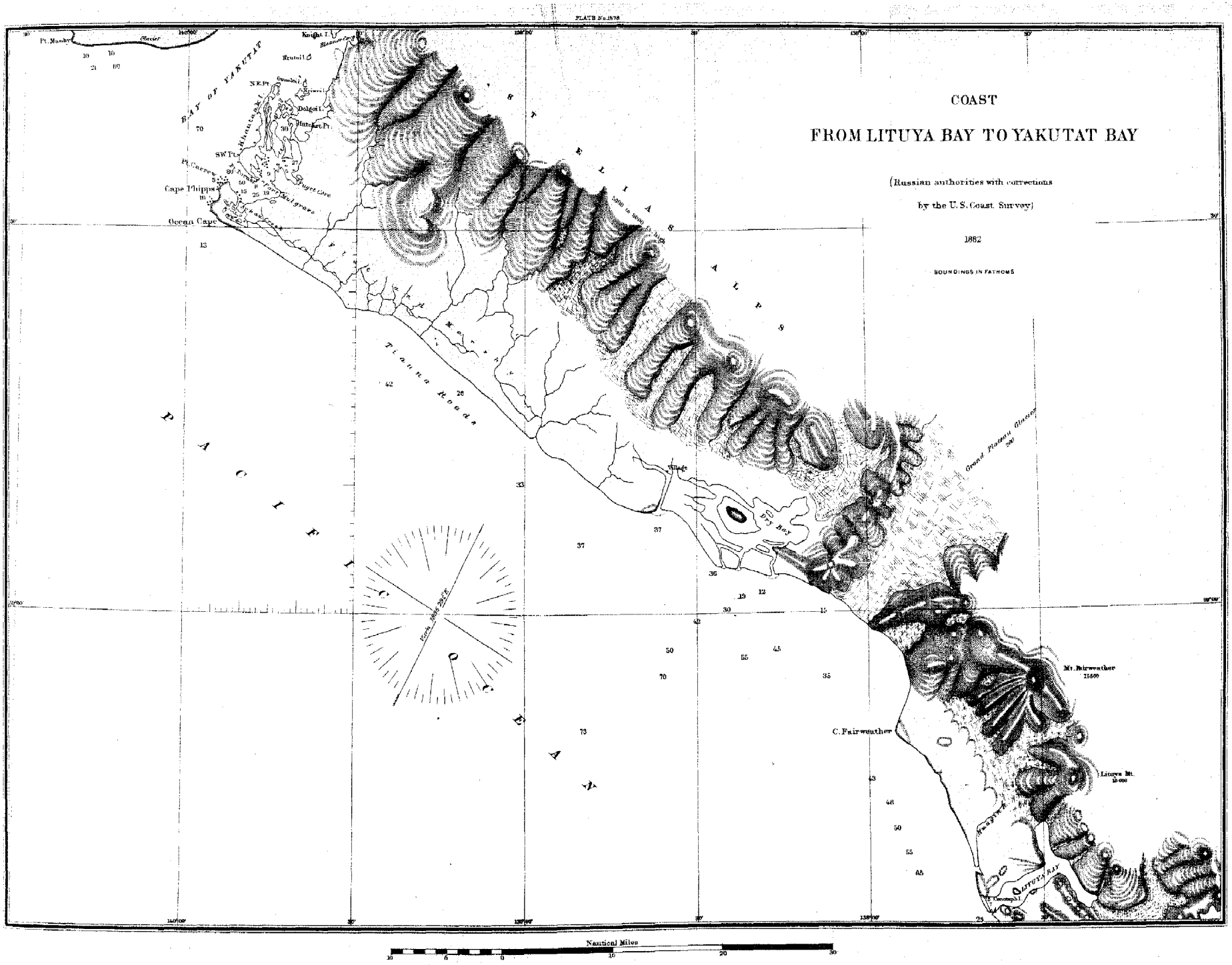
* **Yatchnoi** or **Egg Island** of Tebienkoff.

† On the 13th of July, 1786, two boats of La Perouse containing six officers and fifteen men were overtaken by the bore in the passage-way with the ebb tide and lost. Another boat passed safely through the breakers.

‡ Wrongly marked Mount Crillon on an early edition of U. S. Coast Survey Chart No. 701.

§ See U. S. Coast Survey Harbor Chart No. 742, Lituya Bay and Entrance.

‖ Named by Cook in 1778, (vol. ii, p. 346;) **L'taya Capo** of Tebienkoff; **Capo de Beautemps** of De Mofras; **Gutwetter Cap** of Grewingk, and **Kherushi-pagodi** of the Russians.


COAST
FROM LITUYA BAY TO YAKUTAT BAY
(Russian authorities with corrections
by the U.S. Coast Survey)
1882
SOUNDINGS IN FATHOMS
PLATE No. 1578
BAY OF YAKUTAT
ALASKA
PACIFIC OCEAN
Pt. Manby
Glacier
Knight I.
Kruzof I.
N.E.Pt.
Dolgoi I.
Hatchery Pt.
SW Pt.
Pt. Caerew
Cape Phipps
Ocean Cape
Tlauna Rocks
Dry Bay
Grand Plateau Glacier
Mt. Fairweather
15500
C. Fairweather
Lituya Mt.
15000
LITUYA BAY
St. Conception
Nautical Miles
10 5 0 10 20 30

foot of the mountains being densely wooded. Cape Fairweather is an evenly rounded point, with an elevation behind it sloping gently to the sea and abruptly to the mountains, which, with the low land behind it in profile, resembles the front part of a low slipper. The summit of the cape is bare of vegetation, and indicates the presence there at some previous time of a glacier, which has left its tracks in large heaps of glacial drift piled irregularly, some of it of a bright iron-rust red color. Water runs through the beach in several places, and it is not improbable that, underneath all the glacial debris and protected by it from the sun, there may still exist large masses of ice.

From Cape Fairweather **NE. ¼ N.** about thirteen miles is **Mount Fairweather,*** one of the most remarkable of the Saint Elias Alps. This mountain seen from the **SW.** shows a middle angular summit with a high shoulder on each side of it. These send down three high ridges with glaciers between them. **SE.** from the mountain is a deep sinuous valley, which appears to divide the range and is quite filled by a large glacier. Westward the range is much broken and considerably lower. Mount Fairweather is wooded to the height of about four thousand feet. The **SW.** foot of the mountain with its glaciers comes down into a valley which is lower than the wooded low lands between it and the sea.

According to the observations of the U. S. Coast Survey in 1874, Mount Fairweather is fifteen thousand five hundred feet high (with an uncertainty of about one hundred and fifty feet) and situated in

Latitude	58° 54′ 24″ **N.**
Longitude	137° 30′ 59″ **W.**

It is believed to be slightly lower than Mount Crillon, but being more isolated presents a grander spectacle. Between it and Cape Spencer the peaks of the Saint Elias Alps are as follows: First, a small double peak; second, Lituya Peak; third, a small single peak; fourth, Mount Crillon; fifth, Mount La Perouse, high and split at the top; sixth and last, a small single peak. There are numerous other summits of course, but the above mentioned are those which rise above the general level of the range. Northward from Fairweather to Yakutat Bay there are no remarkable peaks, the range averaging five to eight thousand feet, with nearly uniform summits and rugged surface.

From Cape Fairweather the coast turns to the northward for some four miles to a point where the Fairweather group sends a spur to the water's edge. Just beyond this, **NW.**, is a valley filled by a good-sized glacier,† separated from the sea by a wooded bank about forty feet high through which several streams cut their way. There is a smaller glacier in the same valley a good way farther up. West from this valley another spur comes down to the beach. These ridges are all wooded. From the first mentioned the shore trends westward for twenty miles, forming a bay with soundings in twenty to fifty fathoms over a smooth muddy bottom. Beyond the second spur is the seaward face of an immense glacier, called by La Perouse **La Grand Plateau**, and referred to in the voyages of Cook and Vancouver, who, however, did not realize its character. From the mast-head of the U. S. Coast Survey schooner *Yukon* in 1874, seventy-five feet above the water, no end could be seen inland to this vast plain of ice, nor could any high land be seen north from it. Near the beach the Grand Plateau glacier is four or five miles wide and bounded on the west by a spur of the mountains. In front of the glacier is a narrow wooded bank about fifty feet high with no low land in front of it. The middle part of this bank opposite the axis of the glacier is grassy but bare of trees. Several small streams cut through it. The highest part of the Grand Plateau glacier (which appears to the eye almost level) visible from the vessel was estimated to rise about two hundred feet above the sea. The spur of the mountains west from it rises about three thousand feet, with rounded outlines, bare of snow, (in May,) well wooded below and grassy above. Near the beach there are some abrupt cliffs intersected by a deep gorge with a stream in it and a higher rocky and partly snow-covered mountain behind the head of the gorge. From this spur, which trends in a generally northerly direction from the sea, a low ridge makes out in a westerly direction two or three miles with gradual slope to the level of a low, flat, wooded plain, a strip of which, about a mile wide, intervenes between this ridge and the sea.

Northward and westward from the ridge is **Dry Bay,‡** named by the U. S. Coast Survey in 1869.

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*Named by Cook in 1778, (vol. ii, p. 345.) **Gora Khoroshi-pagodi** of the Russian Hydrographic Office Chart No. 1378.

†This glacier is the **Kakhvegina River** of Tebienkoff's Chart VII of 1849. There is no river except the water from the glacier, which reaches within a very short distance of the sea.

‡At a comparatively short distance off shore the plain is below the horizon, the spur east from it appears like a projecting point, the solitary knob like an island, while the mountain range behind fulfills the similitude of a bay with an island in it. Cook saw this in 1778, and (supposing it to be the bay with an island in it in which Bering anchored on the 20th of July, 1841) named it **Bering Bay.** This name was adopted by Malaspina, Dixon and others, and found a place upon their charts as Beering's or Behring's **Bay.** It is now known that Bering anchored west from Kayak or Kaye Island, near the mouth of the Copper or Atna River, but these navigators were unaware of it. La Perouse was the first to approach the coast near enough to see that there is really no bay in which a vessel could enter. He put it on his chart with tolerable accuracy and called it **Behring's River.** The map of Tebienkoff for this region is astonishingly inaccurate, and represents a triangular flat traversed by five rivers, the **Tlegan, Taaltang, Kunakagi, Vankagina** and **Kakangina,** which are represented as mouths of a sixth, the **Alsekh River.** This seems to have been drawn from reports, in which the Grand Plateau glacier and the lagoon of Dry Bay with its numerous mouths had been confounded or confused together. It has already been noticed (page 199) that an Alsekh or Alsekh River does rise on the opposite side of these mountains and flow toward the Yukon basin, and it is not improbable that some Indian report of this may have added to the confusion of the author and occasioned the use of the name here. Dry Bay, by some typographical error, was also called **Shallow Bay** in the old Alaska Coast Pilot of 1869. This region is represented on U. S. Coast Survey Harbor Chart No. 751.

It is an irregularly-shaped lagoon varying in size according to the season, in parts very shallow and discharging by a number of mouths into the sea. The bay is ten or twelve miles long E. and W. and half as wide, with numerous islands and banks in it which have not been surveyed, one of which has in its middle a black knob or butte with rocky precipitous sides and timbered above. It is entirely separated from the high land in the vicinity and appears several hundred feet high. The streams which flow from Dry Bay are navigable for boats and canoes, but have bars at their mouths which require great care to pass over, as the sea generally breaks on them. The Indians, however, get their large canoes, forty to sixty feet long, in and out by selecting their time, and it is reported that once inside there is continuous or nearly continuous navigation by these streams and lagoons behind the sea beach all the way to Yakutat.

The sea in this vicinity is usually discolored by milky water from the glacial streams, which, in 1874, covered the surface to ten miles off Cape Fairweather with a thin stratum through which the blue water boiled up in the vessel's wake. About twenty-eight miles westward from Cape Fairweather a rather large stream enters the sea over a well-marked bar. This entrance is indicated by a small bluff or dune on the right bank at the mouth of the stream, which is higher than any other elevation on the shore of this flat and even plain. The soundings are very even. At twenty-two miles off the coast on the parallel of Cape Fairweather the depth is only seventy-three fathoms.

From the dune or bank above mentioned the shore extends in a westerly direction forty-five miles to Ocean Cape. This shore recedes slightly northward at about half that distance, and hereabouts Meares anchored in 1787, in twenty-seven fathoms, while the natives came off in canoes to trade. Meares named the locality **Tianna* Roads.** This stretch of shore is thickly wooded near the sea, with more open spaces inland. The alps which bound it to the north at a distance of seven to ten miles from the sea carry numerous glaciers. A very large one **N NE.** from Dry Bay has five affluents. Westward from these there are six others within a distance of thirty miles, several of which have branches; one is quite large and reaches to the summit of a saddle in the range. These glaciers spread out fan-like near the foot of the parent range, and from them is derived the water which fills the numerous lakes and streams previously referred to.

It is stated that these waters are very rich in salmon in their season, and there are several T'linkit villages at favorable localities. One of these was visited about ten years since by the master of a whaling vessel at anchor in Port Mulgrave, and by him reported to be the largest, finest and most clean Indian village he had seen in all his experience of the coast. The population was large, the houses well built, solid, adorned with paintings and carvings of wood, and expressly adapted for defense. Most of these people remain in their villages, small parties going out on hunting and trading expeditions or to kill seal near the glaciers of Disenchantment Bay. They are treacherous and warlike and have committed a number of murders merely for plunder. Navigators in small trading vessels who may be visited by them should therefore be on their guard and never allow them to spend the night on board. What is known of this region is represented on U. S. Coast Survey Harbor Chart No. 757.

Ocean Cape,† which terminates the southwestern extreme of the low land above referred to, is the southern angle of Cape Phipps, and is composed of a low bank or gravel bluff thirty to fifty feet high, nearly perpendicular toward the sea and sloping rapidly northward. In front of it is a shingle beach and several rocks extending off southward and marked by kelp. In rough weather there are heavy breakers extending half a mile off shore on both sides of Ocean Cape, and at a distance of two miles there is only thirteen fathoms of water over a sandy bottom. The land behind the cape is quite thickly wooded with spruce trees of moderate size.

About twenty miles westward from Ocean Cape is **Point Manby** of Vancouver, the exact position of which is doubtful, since Vancouver's position has been shown to be inaccurate by observations made by the U. S. Coast Survey in 1880.‡ This point appears low at the water's edge, with a few willows near the shore, immediately behind which is a hill or bluff, flat on top, rising abruptly, and apparently composed of glacial debris.

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* After the Sandwich Island chief who was a passenger with him. The name has been misprinted **Diana Roads.**

† Named by Tebienkoff **Morskoi (Ocean or Sea) Cape** in 1849. Originally the name of Cape Phipps, given in 1786 in honor of the Honorable Constantine John Phipps, Baron Mulgrave, appears to have been intended by Dixon for the whole of that arm of land south from the entrance of Port Mulgrave. To the northern angle of it he gave the name of **Point Carrew.** There can be no doubt that by most of the older hydrographers the name of Phipps was applied to what is here called Ocean Cape. By Kromchenko, in 1823, the name of Cape Phipps was applied to the point called Carrew by Dixon. The usage of the Coast Survey charts since 1869 will be followed here, making Point Carrew the northern, Cape Phipps the western, and Ocean Cape the southern angle of this point of land.

‡ This is **Point de la Boussole** of La Perouse, **Bolshoi (Great) Point** of Tebienkoff, **Cabo San Elias** of Galiano's Atlas and Russian Hydrographic Office Chart No. 1378. The observations of the U. S. Coast Survey, while insufficient to correct the chart, give reason to believe that the western shore of Yakutat Bay is farther west and Disenchantment Bay farther north than any of the charts show, but as the observations were chiefly compass bearings they need to be confirmed with a more exact instrument.

Between Ocean Cape and Point Manby is the entrance to the **Bay of Yakutat**, a deep indentation of the shore, named simply **Yakutat** by the T'linkit tribe which inhabits its shores.* This bay is about twenty miles long in a **N.** and **S.** direction and ten or twelve miles wide, with a greatest depth probably not much exceeding one hundred fathoms.

The land on both sides of the bay for two-thirds its length is moderately low; the flanks of the mountains are only reached near its northern part. The western shore is compact, and as far as known has not more than one small island near the mouth of a considerable stream which flows at the base of the foot-hills of the Saint Elias Alps. The eastern shore is lower, with a number of islands bordering it, among which are several anchorages.

Beginning at Ocean Cape the shore rounds to the northward and northwestward about two miles and a half to Cape Phipps, composed of the gravel bluff before referred to, off which *rocky shoals and rocks* extend at least a mile, marked by breakers in most weather. Thence to **Point Carrew** of Dixon the direction is more to the eastward, and the *foul ground*, if anything, extends even farther westward. From Point Carrew the **SW.** point of Khantaak Island† bears about **N.** ¾ **E.** about a mile and a quarter. Between the two is the entrance to **De Monti Bay** of Galiano,‡ a passage leading between the islands and the mainland, and trending hereabouts two or three miles in an easterly direction with an average width of a mile. In mid-channel between Southwest Point and Point Carrew the U. S. Coast Survey sounded in eighty fathoms.

From Point Carrew **NE.** by **E.** about two miles is the **SE.** point of Khantaak Island, named **Point Turner** by Dixon§ in 1787.

This is a low narrow gravel spit half a mile in length, of which the eastern part is grassy and bare of trees. South from it the water is *shoal* and only reaches three fathoms at low water at a distance of two and a half cables **S.** from the shore.

The south shore of Khantaak Island between Point Turner and Southwest Point is nearly straight, with a low wooded bank behind it, the beach of boulders or shingle, and shoaling off very gradually to the distance of a cable. The material of the beach is doubtless of glacial origin and includes some very large erratic boulders of pure white marble, which from a little distance look like large blocks of ice on the strand. As far as known there are no off-lying dangers.

The southern shore of De Monti Bay extends in an easterly direction from Point Carrew about a mile to the entrance of **Ankau Creek.**‖

This part of the shore is mostly composed of a wooded, perpendicular, gravel bluff of no great height, with a shingle beach at its foot, which should not be approached within a cable and a half. Ankau Creek is about two cables wide at its mouth, with a depth near the entrance variously stated at from one and a half to three fathoms at low water. Its eastern point of entrance was named **Point Gorda** by Malaspina in 1791. Within, the creek is very tortuous with numerous islands, passages and ramifications, quite differently represented on different charts. The depth is from one to six fathoms. In many places there are overfalls, whirls and dangerous eddies at certain stages of the tide. The creek extends nearly to the ocean beach on the **SE.** On the narrow neck separating them, in the beginning of the century, the Russians established the **Novarassi** (**New Russia**) trading post or settlement, which about 1803 was destroyed by the T'linkit and the inhabitants murdered. This settlement contained seven buildings defended by a stockade, and five others outside. Even the site has not been seen by white men for half a century.

At its southeastern extreme Ankau Creek connects with the inland navigation which extends behind the oceanic shore, as previously described, as far as Dry Bay, still unexplored.

The principal island on the east side of Yakutat Bay is **Khantaak Island**, adopted by Tebienkoff from the native name,¶ and is about seven miles long in a **N.** and **S.** direction and in general not over a mile in width, but very irregular on its eastern and rather compact on its western side. The latter is more or less curved and indented with a few visible rocks near it, and shoals off gradually with a boulder bottom to the depth of three to five fathoms one-quarter to half a mile westward from the beach.

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* This bay was discovered and named **Bais de Monti**, after one of his officers, by La Perouse, but only partly explored by him in 1786; Dixon in the following year named it **Admiralty Bay**. Cook did not see it, but Vancouver, finding Cook's name of Bering Bay inapplicable to Dry Bay and supposing Yakutat to have been the place where Bering anchored, rejected Dixon's name and called it **Behring Bay**. On Malaspina's chart Galiano calls it **Bahia Almiralty** after Dixon. Khromchenko, in 1823, adopted the native name of **Yakutat**, and has been followed by other Russian authorities. It appears also on various charts as **Behring, Amirants,** and **Jakutat Bay**.

† **Cabo Munoz of Malaspina**; **S. W. Point** of Tebienkoff.

‡ This modified application of La Perouse's name, adopted by Galiano on the charts of Malaspina's voyage and also in the Atlas of De Mofras, has the advantage of preserving an historic name and also of naming a part of the bay which otherwise would have required a new name, since no other has been applied to it. The form used by Galiano was, of course, **Bahia de Monti.**

§ After his mate James Turner. It is curiously mistranslated into Russian as **Turning (Poverotnoi) Point** on Russian Hydrographic Chart No. 1378, in Khromchenko's plan.

‖ Named by Malaspina in 1791, for the T'linkit chief **Ankau** or **Ancau**, who assisted with his people and canoes in making the survey; **Estero del Ancau** on the chart, and **Ankau** in the text, of the Viage Sutil y Mexicana by Galiano, in 1802, p. cxvi.

¶ **Hantak Island** of some charts.

This shore should not be approached without caution, *as there may be off-lying rocks.* Khantaak Island is generally low and nearly level, rising forty or fifty feet above the sea, highest to the **SW.** and gradually falling in the opposite direction; it is composed of mixed boulders, gravel and clay, doubtless glacial detritus, and is densely wooded with a growth of Sitka spruce of moderate size. On the clay forming its surface are numerous pools of water.

The waters between Khantaak Island and the main shore eastward from it are much obstructed by shoals and rocks. Among these are several snug harbors. The most accessible of these lies north of Point Turner and was named by Dixon **Port Mulgrave.*** It is about three-quarters of a mile long **NW.** by **W.** ½ **W.** and **SE.** by **E.** ½ **E.** and a quarter of a mile wide. It is easy of entrance, though the passage is extremely narrow, and on all charts previous to 1875 is represented in a *dangerously inaccurate manner.*

Port Mulgrave.

The harbor is formed by the peninsula of Point Turner on the south, and on the north by *a series of shoals* or *boulder reefs* extending nearly parallel with that peninsula and of which three distinct parts are visible at extreme low water. The *Northwestern Shoal* at low water is composed of a flat bank of gravel with a few large boulders rising above the general surface. The head of Port Mulgrave is composed of a narrow shallow bight, **N NE.** from which is a projection of Khantaak Island, the end of which is about two cables wide and faces **SE.** From the whole front of this the aforesaid shoal extends nearly half a mile in a **SE.** by **E.** direction, narrowing as it goes. Most of this is out at ordinary low tides, and the highest portions are only awash, with a few dry points, at the highest tides. Separated from the eastern extreme of Point Turner by less than three hundred yards at low water is the *Middle Shoal,* about a cable long **NW.** and **SE.** and half as wide. It is entirely covered at high water and is much nearer Point Turner than most charts indicate. Both the southern edge of this shoal and the northern edge of Point Turner opposite are steep-to, so that with reasonable care the narrowness of the passage does not constitute a serious danger. The *Middle Shoal* is separated from the *Northwestern Shoal* at low water by an area covered with about three feet of water.

Shoals.

The third or *Eastern Shoal* lies about **E.** ½ **N.** from the extreme end of Point Turner. Except at the very highest tides, the triangular part which dries out, about a cable long, is marked at its northern and southern angles by some small stones above water, which in calm weather look like ducks sitting in the water. From the dry triangular bank, however, a *long narrow submerged ridge* extends in an easterly direction from the southern angle of the bank directly toward the eastern end of Point Turner, from which it is separated by about two hundred and fifty yards at low water. The extreme western end of this ridge is only a few yards wide and has eleven feet on it at low water. At high water it may be disregarded by vessels drawing less than eighteen feet. Between the Eastern and Middle shoals is a rather crooked, narrow passage with from four to eight fathoms water, through which Puget passed with the *Chatham* in 1794, but between the Eastern Shoal and **Punta de Arrecifes** of Melaspina, a projection of the mainland opposite, is a broad passage with ten to twenty fathoms water.

North and west of Point Turner, Port Mulgrave lies as a narrow elongated basin with muddy bottom, six to twelve fathoms water, good holding-ground and perfectly protected. The only chart sufficiently accurate to depend upon in entering is U. S. Coast Survey Harbor Chart No. 752.

DIRECTIONS

FOR ENTERING PORT MULGRAVE.

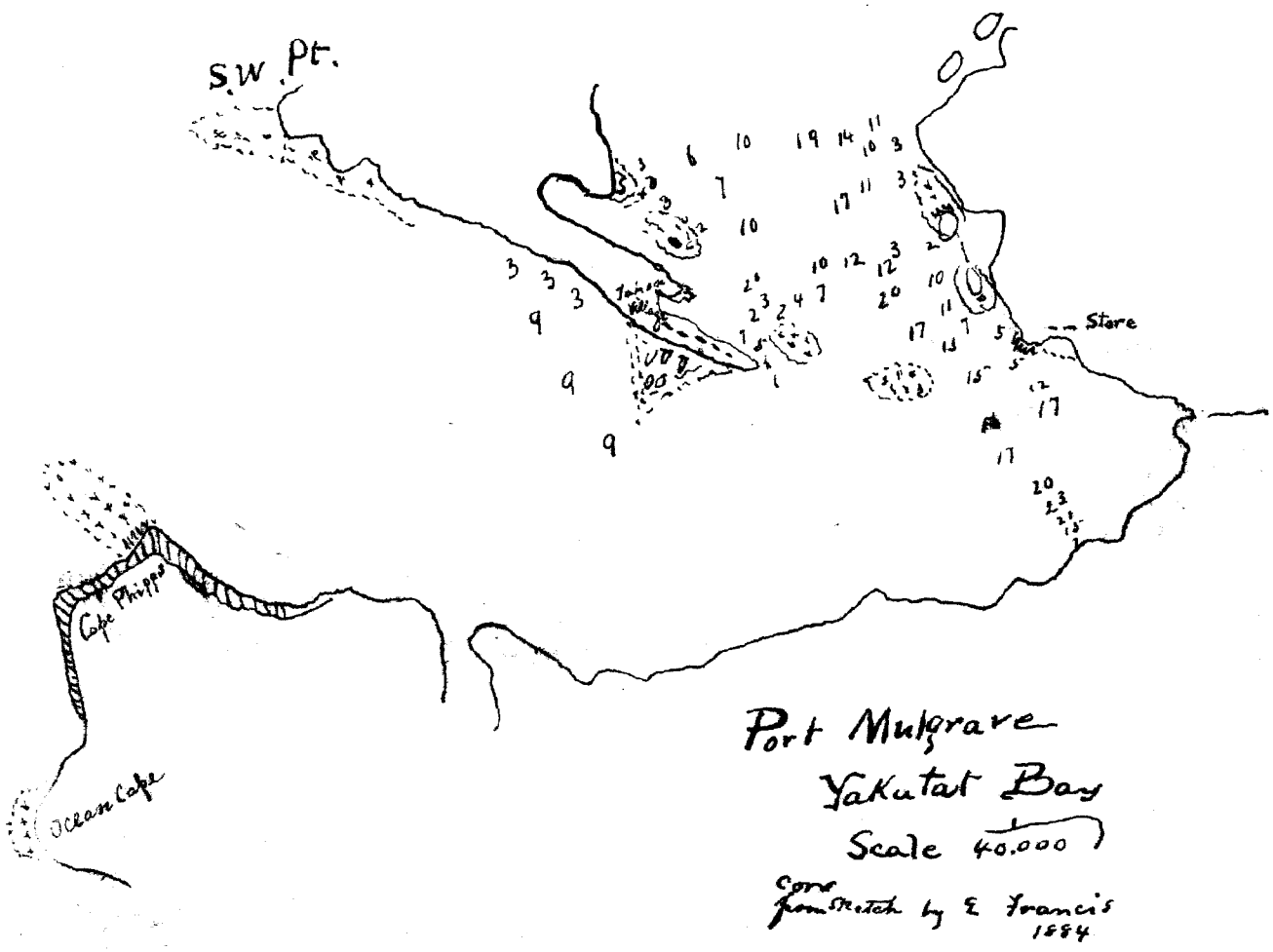
Round Point Turner not closer than a quarter of a mile until its extreme eastern end bears north, when the vessel may be headed up gradually until the eastern end bears northwest a cable distant. The vessel may then be headed up **NW.** by **N.** ½ **N.** to pass a few yards clear of the eastern extreme of the point (with perfect safety, as the beach is of pure sand and so steep that it is impossible to ground) until the latter bears **SW.** by **S.**, when a **W.** by **N.** ½ **N.** course leads to the middle of the basin, where anchorage may be had in nine or ten fathoms muddy bottom, the eastern edge of Point Turner bearing about **ESE.**

At low water is the most convenient time for entering, as the shoals are all out at that time, but with ordinary care the port can be entered or left at any time.

The astronomical station of the U. S. Coast Survey on Point Turner was situated on the south edge of the grass near the eastern extreme of the point, at or about high-water mark. It was determined to be in

Latitude	**59° 33′ 42″ N.**
Longitude	**139° 45′ 59″ W.**

* After Constantine John Phipps, Baron Mulgrave, well known for his Voyage to Spitsbergen. This harbor was included with the one next north from it and adjacent waters under the name of Earth Harbor by Khromchenko in 1883.


S.W. Pt.
Store
Cape Phipps
Ocean Cape
Port Mulgrave
Yakutat Bay
Scale 40.000
Copy from sketch by E. Francis
1884

The variation of the compass in 1874 was 30° 02′ easterly and in 1880 was 29° 56′ easterly, showing a probable decrease of easterly variation at the rate of 1′ annually.

In May, June and July the tides range about eight feet. According to an unconfirmed report of Petroff in Tebienkoff's notes, in October and November it ranges or did on one occasion range over sixteen feet.

Belcher gives the range Mount Fairweather over Point Turner E. 2° N. as a range for recognizing the entrance to Port Mulgrave, through De Monti Bay, from Yakutat Bay; but it often happens that the mountain is not visible and the entrance is perfectly recognizable without it.

On the main shore opposite Point Turner water comes down in several places; that on the island near the anchorage is less clear and pure. About the middle of Point Turner peninsula is a narrow lagoon of half stagnant water. Between this and the beach north of it is a collection of rather inferior Indian houses, occupied during the time of their halibut fishery or when vessels are there for trade, but usually vacant. In the woods NW. of the port are the relics of a whale boat, hidden there by the natives after they had murdered the crew for their outfit—having enticed them away from their vessel by stories of gold in the (granite) mountains near by.

Immediately northward from the shoals which bound Port Mulgrave is the entrance to a similar bight situated somewhat more northwesterly, and for which the name of **Rurik Harbor** is reserved. This was originally explored by Khromchenko in 1823, whose sketch indicates an entrance about two cables wide between the *Northwestern Shoal* of Port Mulgrave and **Piedras Point**, from which *a reef of rocks* borders a similar shoal or bank on the north side of the same entrance. The water deepens from three and a half fathoms on the south side to ten fathoms close to the rocks opposite, with about eight fathoms in mid-channel. Thence the harbor indents Khantaak Island about three-quarters of a mile in a NW. by W. direction, with a width of a quarter of a mile and a depth of ten to twenty-four fathoms. It has not been carefully surveyed, and is less convenient than Port Mulgrave both as to situation and supposed depth of water, for which reasons sailing directions are hardly required.

The area included between the Port Mulgrave shoals on the south, the mainland on the east, Khantaak and other islands on the west and north, ranges from six to forty fathoms over a rocky bottom, with several rocks and shoals about its shores. To the northwestward it indents Khantaak Island with a bight similar to and nearly parallel with Rurik Harbor, with a patch of rocks off Piedras Point on the southern side of its entrance. Northward several shoal unnavigable passages separate narrow strips of land from Khantaak Island, while eastward from its northern part a very narrow channel leads between the two northern of three small islands to the broader passage which separates the Khantaak group from the mainland. The shoalest part of this passage has three and a half fathoms in it. The channels southward and eastward have only from six to eighteen feet of water, and in one of them Puget, of Vancouver's party, grounded with the *Chatham* in 1794.

South and southeast from these channels an arm of the main shore projects with two islets off its NW. extreme. One is quite close in, and *shoal water* extends from the main shore out to and a little outside of this islet. The outer islet is surrounded by a *shoal* which extends chiefly in a ENE. direction. Between this and the one just previously mentioned is a narrow channel with fourteen feet of water in it.

Eastward from the above-mentioned arm of the main shore is **Puget Cove**, about half a mile long in an easterly and westerly direction and about three cables wide. This cove is snugly sheltered and affords four and a half to eight fathoms water. It is mentioned in Puget's report, sounded by Khromchenko, and named by the Superintendent of the U. S. Coast Survey in 1879.

From the entrance of this cove **Johnstone* Passage**, between the main shore and the Khantaak group of islands, trends in a generally NNW. direction with a width of more than half a mile almost four miles, when it turns more to the westward, contracts and then expands into a basin about a mile in extent, its eastern boundary being a narrow irregular projection of the mainland, named by Tebienkoff **Tapor** or **Hatchet Point**. The end of this point is low and separated by a narrow fourteen-foot channel from a group of islets and rocks, of which the largest, nearly two miles long, half-moon shaped and convex to the NNE., was named **Dolgoi Island**† by Tebienkoff. It is bold-to on its eastern and northern shore, off which are two low unnamed islets.

On the western side of the Dolgoi group and between it and the northern part of the Khantaak group Johnstone Passage continues three miles in a generally NNW. direction, its width varying from two cables to over a mile. The least water in the channel is about four fathoms. Northward and eastward from its termination are **Kriwoi**,[1] **Otmeloi**[2] and **Krutoi**[3] **islands** of Tebienkoff; from Otmeloi *a shoal or reef* extends nearly a mile in a W. by N. direction.

Eastward from Hatchet Point is a bay about a mile in extent, unsurveyed, NE. by E.; about three miles from Dolgoi Island is another less protected bay into which several streams fall, and

* Named by the U. S. Coast Survey for James Johnstone, R. N., Puget's lieutenant, who surveyed on this coast from 1787 to 1795.

† Long Island.

[1] Crooked Island. [2] Shoals Island. [3] Steep Island, misprinted Krustoi in the Coast Pilot of 1869.

whose northern and northeastern shores are represented as foul by Tebienkoff, who, however, gives no soundings.

About **NW.** by **W.** ½ **W.**, according to Tebienkoff, a mile and a half from the northwestern end of Dolgoi Island, lies **Northeast Point**, the inner extreme of Khantaak Island, with from four to thirty-five fathoms about it and no off-lying dangers.

The main shore from the northwestern point of entrance of the small bay above mentioned extends five and a half miles in a **N.** ½ **W.** direction to the **SE.** point of entrance to **Eleanor Cove**, named by Puget in 1794. The opposite point of entrance is **Southeast Point**, named by Tebienkoff, and forming the southern extreme of **Knight Island.*** This island is about two miles in length **N NW.** and **S SE.** and about a mile broad. It lies about half a mile off the main shore, protecting Eleanor Cove from the westward. According to Vancouver there are some rocks lying about half a mile westward from its western point and an islet between it and the main shore northward and eastward. The passage around the island is navigable, the main shore receding eastward, forming a small bay in whose **SE.** corner lies the cove which, according to Puget, is in latitude **59° 44′**. On Vancouver's chart there is an islet in it. No soundings are given on any of the charts. According to Tebienkoff (Chart VII) about three-quarters of a mile **SE.** from Southeast Point is the northwestern end of *a long shoal* making out a mile from the main shore, with which it is connected. This shoal is shown by all authorities, but they differ as to its direction and extent; Russian Hydrographic Office Chart No. 1378, following Vancouver's chart, makes it project to the westward beyond a line joining Krutoi Island and Southeast Point, which is probably an error or it would have received notice from Puget in his report to Vancouver, and is not confirmed by Tebienkoff, who also omits the islet in Eleanor Cove.

From the northern and western part of the bay eastward from Knight Island the coast extends about seven miles **NW.** to a bluff point named by Puget **Point Latouche.**† Up to this point the shore was low and flat, with forty-five fathoms less than a mile from it.

Opposite and **W.** from Point Latouche about a mile and a half is another sharp bluff which, north from Point Latouche nearly two miles, terminates in a somewhat lower point, named by Malaspina **Punta de las Bancas.** The entrance between these two was named **Ferrer Passage** by Tebienkoff, and leads to **Disenchantment Bay.**‡

This bay, including the entrance, is about six miles in length **N.** from Point Latouche and two and a quarter miles wide. Directly eastward of the entrance is a bight of no great extent with a sand beach, affording good anchorage, but which, according to Puget, had in July, 1794, a most dreary aspect from its vicinity to the ice, notwithstanding which vegetation was in an advanced state of forwardness. The water both in the entrance and the bay is extremely deep; Malaspina anchored in twenty fathoms about two cables from the shore, near the **SW.** end of the sand beach above mentioned, where his observatory was set up. A stream of fresh water comes in here and there is a little lowland, behind the beach. Elsewhere in the bay steep mountains covered with snow, between which three large glaciers come down, rise directly from the water or the ice which generally covers it, and prevents navigation except near the entrance. There is a small island near the middle of the bay close to the eastern shore, named **Haenke**§ **Island** by Malaspina. One hundred and twenty fathoms without bottom was found by the launches of the Spanish ships among the pieces of ice in the outer part of the bay.

According to Malaspina's observations‖ the observation spot was situated in

Latitude	**59° 51′ 10″ N.**
Longitude	**139° 48′ 30″ W.**

The variation of the compass in 1791 was **32° 24′** easterly; it is now believed to be about **30° 16′**.

In Disenchantment Bay during the summer hair seal are abundant around the fragments of ice, and the Yakutat natives go up there and spend several weeks hunting them.

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* Named by Puget in 1794; **Dalni Island** of Tebienkoff in 1849.

† **Punta de la Esperanza** of Malaspina in 1791, according to Galiano's Atlas, Chart No. 9, 1802.

‡ Tebienkoff, in his "Notes," is said to ascribe this name of **Ferrer** to Malaspina, but the compiler has only had access to a wretched manuscript translation of the Notes and this may be a misconception. The name does not appear in Galiano's text or on the chart of Malaspina in the atlas accompanying Galiano's description of these voyages. Moreover, the statement that Malaspina named the bay "**Assurance Bay**" resting upon the same authority, has not been confirmed by any investigations which the compiler has been able to make and does not appear on any chart known to him. Malaspina, in 1791, named the anchorage **Puerto del Desengaño**, best rendered into English by **Disenchantment**, in reference to the Northeast Passage which the explorers sought here and did not find; in Russian **Razubirenie**. The bay was named by Malaspina **Bahia de las Bancas**, in allusion to the ice; it is the **Digges Sound** of Puget, but the name applied to the port or anchorage has generally, as here, been applied to the whole bay.

§ After Thaddeus Haenke, botanist and naturalist of the expedition.

‖ These are taken from the chart. In the text the latitude is given (p. cxvi) as **59° 59′ 30″**, the variation of the compass at **32° 49′** easterly, and nothing is said about the longitude.

In 1880 observations by the U. S. Coast Survey indicated that Disenchantment Bay is situated farther northward than Tebienkoff places it on Chart VII of his atlas, and that the low land south and west from it is nearer to the foot of the mountains than has been supposed. The observations however were not extensive enough to correct the chart by.

South and west from the western point of entrance to Disenchantment Bay the **NW.** shore of Yakutat Bay stretches along in the form of abrupt bluffs which appeared from a distance to be composed of stratified rock. The flanks of the mountains behind the level top of this series of bluffs bear several glaciers. As nearly as could be observed from the vessel these bluffs cease at the **NE.** side of a valley through which runs a river called by Tebienkoff the **Kwik River.*** From the **SSE.** there appears to be a bight near this river-mouth, with what appears like an island, quite low and wooded, in it. From aloft, however, it was reported that this island was connected with the shore **SW.** from it by a low dry sand bar.

Owing to the uncertainty in position of the shore-line **SW.** from the mouth of this river the identification of any points of land here is very unsatisfactory. About half way between the river and Point Manby Tebienkoff has a point called **Nearer (Blizhni) Point.** He also erroneously represents all this shore behind the beach as sandy and wooded. In this vicinity the U. S. Coast Survey in 1880 observed that the immediate shore was low and largely composed of granite and boulders. It shoals off quite gradually, with a bottom of large stones and a little sand between them. On the stones giant kelp grew profusely. At more than a mile from the shore the depth was only ten fathoms, and an occasional heavy swell showed that in places it was even less.

At Point Manby and eastward to the Kwik River the shore was bordered by trees, apparently willows and alders, with a somewhat denser belt a little farther back. Behind this rises a bluff or bank of high land as described by various navigators. About the vicinity of Tebienkoff's Nearer Point the trees cease, but begin again near the river. The bluff or table-land behind rises higher than the river valley and completely hides it from the southward, and is in summer bare of vegetation (except a few rare patches on its face) and apparently is composed of glacial débris much of which is of a reddish color. In May, 1874, when observed by the U. S. Coast Survey party of that year, the extensive flattened top of this table-land or plateau was covered with a smooth and even sheet of pure white snow. In the latter part of June, 1880, however, this snow had melted and for the first time the real and most extraordinary character of this plateau was revealed. Within the beach and extending in a **NW.** direction to the valley behind it, at the foot of the Saint Elias Alps, an undetermined distance, this plateau, or a large part of it, is one great field of buried ice. Almost everywhere nothing is visible but boulders, dirt and gravel; but at the time mentioned, back of the bight between Point Manby and Nearer Point for a space of several square miles the coverlid of dirt had fallen in, owing to the melting of the ice beneath, and revealed a surface of broken pinnacles of ice, each crowned by a patch of dirt, standing close to one another like a forest of prisms, these decreasing in height from the summit of the plateau gradually in a sort of semicircular sweep toward the beach, near which, however, the dirt and débris again predominate, forming a sort of terminal moraine to this immense buried immovable glacier, for it is nothing else. Trains of large boulders were visible here and there and the general trend of the glacier seemed to be **NW.** and **SE.**

Between Disenchantment Bay and the foot of Mount Saint Elias, on the flanks of the Alps, seventeen glaciers were counted, of which about ten were behind this plateau, but none are of very large size, and the sum total of them all seemed far too little to supply the waste of the plateau if it were to possess motion. The lower ends of these small glaciers come down into the river valley before mentioned and at right angles in general to the trend of the plateau. To the buried glacier the U. S. Coast Survey has applied the name of Malaspina in honor of that distinguished and unfortunate explorer.† No connection could be seen between the small glaciers and the **Malaspina Plateau,** as the former dip below the level of the summit of the latter. The Malaspina glacier had no névé, nor was there any high land in the direction of its axis as far as the eye could reach. Everywhere, except where the pinnacles protruded and a few spots on the face of the bluff, it was covered with a thick stratum of soil, gravel and stones, here and there showing small patches of bright green herbage. The bluff westward from Point Manby may probably prove of the same character. Unfavorable weather and the exigencies of the season's plan of work prevented a more thorough investigation of this unparalleled phenomenon.

From Port Mulgrave and thence to the westward the most conspicuous spectacle in clear weather is that part of the uplift of the Saint Elias Alps which extends in a westerly direction from a point inland some eighteen miles **NNW.** from Disenchantment Bay. This forms a broken range ten or twelve thousand feet in height with its sides and many of its peaks covered with eternal snow. It terminates westward in the magnificent peak of **Saint Elias.** Out of the range, about **NW.** by **N.** ½ **N.** from Port Mulgrave, rises a peak about thirteen thousand feet in height with three glaciers on its flanks, named by the U. S. Coast Survey, in 1874, **Mount Vancouver.** Farther westward **NW.** ½ **W.** from Port

* Kwik means river in the dialect of Prince William Sound, hence this name may be due to a misapprehension.

† Falling into disgrace with the court soon after his return to Spain, Malaspina was long imprisoned, and in the report of his expedition given by Galiano his name does not appear in a single instance.

Mulgrave is another, named at the same time **Mount Cook**, believed to be sixteen thousand feet in height. Careful observations made in 1874 on Mount Saint Elias result in giving it a height of nineteen thousand five hundred feet, with a probable error in the determination of less than five hundred feet.

Behind and apparently distinct from this range is another peak, observed for the first time in 1880, apparently as high as Mount Cook, and which has been named **Mount Malaspina**. This may be the companion peak (Piton) indicated near Mount Saint Elias on the chart of La Perouse. Saint Elias for the upper five thousand feet of its height is so ragged and precipitous as to be bare of snow. Part of it showed on a precipitous rock face an appearance of bedded or stratified rock dipping slightly to the northeastward. The rock, judging from fragments brought down to the shores, is of a syenite or granite destitute of mica and of a whitish gray color. Nothing in its appearance indicated a volcanic origin, though it is probable there are some small low volcanic cones on the sides of the range, which as a whole, in this and other respects, is believed to much resemble the Sierra Nevada. It was named by Bering in July, 1741. The position of Mount Saint Elias is in

Latitude	**60° 20′ 45″ N.**
Longitude	**141° 00′ 12″ W.**

according to observations by the U. S. Coast Survey. It is often distinctly visible at a distance of more than one hundred and fifty miles.

PAMPLONA BANK.

An off-shore danger, reported in the last century but never since observed, is retained on most charts under the name *Pamplona Rock*. This was discovered or reported by Don Ignacio Arteaga in 1779. Extracts from the log* and journal of the voyage contain the only information at first hand in regard to this supposed danger.

Galiano, in a synopsis of the voyage of Arteaga, states that "having obtained no observations they estimated their position." The log-book makes no reference to any observation being taken, but begins as follows:

"July 16, 1779, | 59 22 | 35 57+ | 26° var. |

"The dark clouds which covered the coast disappeared on the sixteenth and we descried it at the distance of ten leagues, and also rediscovered the high promontories which bore in part northeast‡ at the 28th degree of the first quadrant, and in part more to the southeast, which was lower and at the 45th degree of the same, whereof an adjacent point bore **NE. ¼ E.**; and also appearances which, at the distance of a mile, indicated a bank, (bajo,) which was not examined on account of the fresh and favorable wind for continuing upon our course."—[*Extract from the log.*] On the chart accompanying it the Bajo Pamplona is placed in north latitude **59° 10′** and west longitude **41° 11′** from San Blas, equivalent to **146° 24′** west of Greenwich, which is quite erroneous.

The remarks in the journal (p. 307) referring to this subject are as follows:

"As in this latitude when the sky is clear it is hardly dark at night, we saw on the 16th, at one o'clock in the morning, the land which some days before we had discovered, and also discovered ourselves at five in the morning to be in the vicinity of a bank (bajo) which we considered to be in north latitude **59° 02′** and in west longitude **35° 40′** from [cape] St. Lucas, [**145° 32′ W. Gr.**] On the 16th, at two in the afternoon, we observed at the distance of a league Cape St. Elias [Cape Suckling of Vancouver] with the point of the island near it named Carmen, [Kaye Island,] and sounded in forty fathoms water in the bay between the island and the cape."

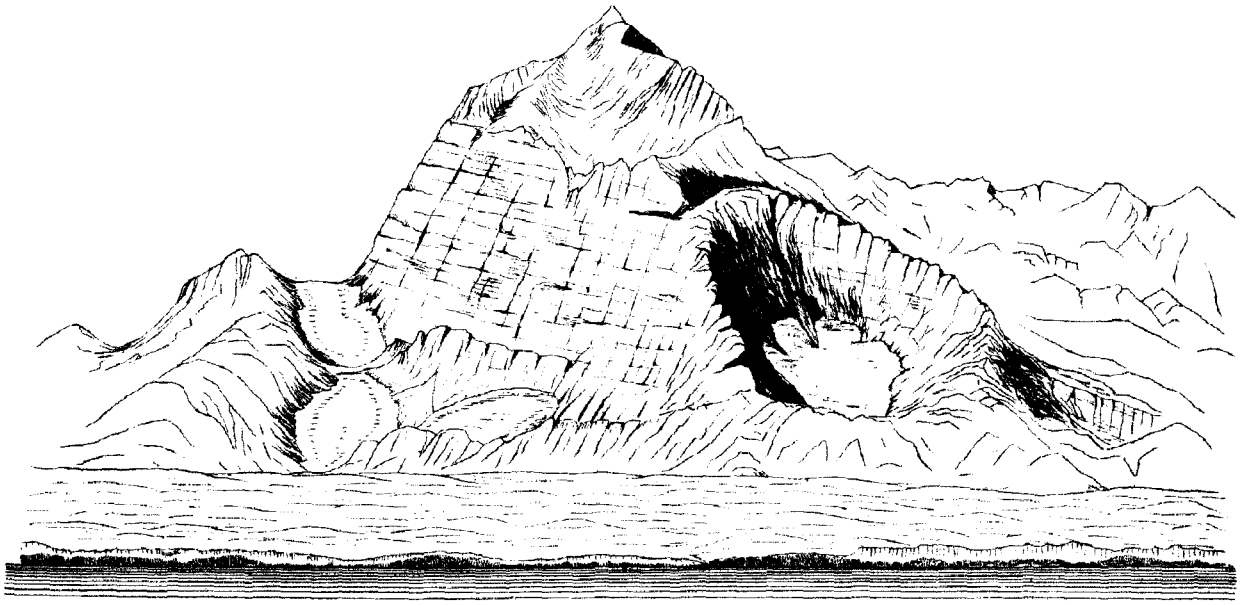
It is evident at once that nothing can be done with the positions, which Galiano says were estimated, and which were apparently estimated differently by the author of the journal, the writer of the log and the constructor of the map, for no two of them agree.

The only certain thing is that when the appearance (of what kind is not stated) which was taken to indicate a shoal was seen at a distance of a mile, Mount Saint Elias and the high land in front of it bore **N. 28° E.** by compass, the Alps eastward from it **N. 45° E.** and a point or spur from these last **NE. ¼ E.**, and the nearest land northward was about thirty miles away. Platting these bearings as above interpreted, with the assumed variation of 26° easterly taken from the log-book, and the intersections fall in about latitude **59° 35′ N.** and longitude **143° W.** of Greenwich, which places the vessel about

* Arteaga's voyage was never published. A copy of the manuscript log-book, journal and a map from the Spanish archives, certified to be correct copies by Navarreté, are in the library of the State Department at Washington, D. C., from which the above extracts have been made.

† This longitude is west from Cape St. Lucas, which is 109° 52′ W. Gr.

‡ The original reads, "el mas norueste á los 28° del 1er cuadrante y el mas sueste que era el menor á las 45° del mismo, en cuya inmediacian habia una punta que les venia al NE. ¼ E." The "norueste" however, from the context, from the map, and from the known facts, should have been "nordeste," an error of the original recorder. The high promontories were Mount Saint Elias and the peaks near it, and the lower that part of the range about Mounts Cook and Vancouver.



Mount St. Elias N. by W. 43 Miles

(From a sketch by Asst Hall in 1874)

(Telescopic view)

ten leagues from the shore northward from it and nearly midway between Bering Bay and Middleton Island. In the former respect it agrees with the record and in the second with the chart accompanying the record. The whole question as to whether this appearance was really due to a shoal or bank still remains open.

In the "Notes" accompanying Tebienkoff's Atlas, after referring to the discovery of the expedition under Arteaga, it is said Talin, a mate of the Russian vessel *Orel*, saw it in 1794 and named it **Orel (Eagle) Rock**, after the vessel, but did not determine its position. No publication of Talin's report, except this mention by Tebienkoff, is known to have been made.

Galiano gives a synopsis* of Arteaga's voyage but says nothing of the discovery of the shoal. On chart No. 3 of the Atlas accompanying his work a "Pamplona Bank" is placed ("according to the testimony (presencia) of five cartographers of the Department of San Blas," Mexico) in latitude **59° 07′ N.** and about longitude **142° 41′ W.** of Greenwich. No reference is made to Arteaga on the chart, but it is said that it is supposed to be the same bank as that reported by Russians to Vancouver.

On none of the Spanish charts is the danger referred to as a rock; it is always called a bank or shoal (bajo).

Vancouver's paraphrase of Puget's report to him in regard to the vicinity of Port Mulgrave contains the following remarks in regard to it:

"Portoff said that a very dangerous rocky shoal about fifteen miles in length lies, by compass, in a direction **S.** by **W.** sixty-three miles from a place called by them Leda-unala. This Mr. Puget conceived to be near the point that I had called Point Riou. Portoff himself had been on this shoal taking sea otters, and stated that the first discovery of it was owing to a Russian galiot having had the misfortune some years before to be wrecked upon it. Two of the crew were drowned and the rest escaped in their boats. Since that period an annual visit had been made to it for the purpose of killing sea otters, which are there met with, and, as it generally proves advantageous, Portoff meant to stop there on his return.† From the Spaniards also I afterward became acquainted that a very dangerous rock existed in this neighborhood, the situation of which they had taken great pains to ascertain, and had found it to lie **S. 41° E.** from Cape Suckling, at the distance of twenty-six leagues, and which was called by them Roca Pamplona; when this was delineated on our charts it appeared to lie in a direction **S. 77° E.**, distant eight miles from the rocky shoal described by Portoff; hence it may be inferred that Portoff and the Spaniards intend the same shoal, though it is not stated by the latter to be so extensive as by the former.

"The Russians, it seems, in navigating this coast make but little use of the compass, even in steering for the above shoal; on such occasions they depart from some particular point on the coast, shape a course by the land and never fail to hit upon some part of the shoal, and hence arises the probability of its being extensive, as has been already mentioned." (Vol. III, pp. 225–6.)

In connection with this account of Vancouver, which he had from second hand, it must be borne in mind that Portoff spoke no English, Puget no Russian; that, as above noted by Vancouver, the Russians made little use of the compass, and hence a mistake in stating or understanding a bearing might most easily occur. That Portoff with his little fleet of skin canoes intended to touch at this shoal on his return to hunt sea otters, which, if the shoal was sixty miles from shore, he could not possibly have done; nor could a course for so distant a shoal have been shaped, as Vancouver says, "by the land" without a compass.

The bay near Point Riou is called on Russian charts "Ledi-anoi," (meaning icy,) and the identification of it with Portoff's "Leda-unala" by Puget is doubtless correct, though there is no such Russian word as "unala." A shoal of considerable extent, upon which otters were formerly taken, lies by compass **W SW.** from Point Riou, between sixty and seventy miles distant. There is much probability that this is the shoal intended to be described by Portoff.

It is quite improbable that any shoal fifteen miles in extent, upon which a Russian vessel had been wrecked and which was annually visited for sea otters, should be omitted from all charts and become entirely unknown except from Vancouver's accidentally preserved notice. There is, however, another possible explanation, which is that the bank intended by Portoff was the *Sea-Otter Bank*, placed by Tebienkoff about midway between the southern end of Kaye Island and northern end of Middleton Island, on which the natives of Prince William Sound assert that the sea otters breed.

At all events it is extremely difficult to believe that any shoal near enough to the surface to bear kelp, upon which sea otters breed, and fifteen miles in extent, can exist in the position assigned to the Pamplona Rock on charts which follow Tebienkoff or Vancouver. The reasons for skepticism will appear in the evidence which follows.

There is no authentic evidence of the existence of either shoal or rock within this century.

A Russian navigator is reported as having declared he had seen it as a three-pointed rock, but as no position or details accompany this tradition it cannot, in view of other facts, be considered as entitled to credit. On the other hand, one of the navigators of the Russian American Company states

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* Relacion, etc., pp. c–ciii, 1802.

† It should be remembered that Portoff had only small skin canoes.

that he "sailed over the longitude laid down by Tebienkoff and did not see it, although the day was clear and a man aloft on the lookout." In August, 1867, the United States revenue steamer *Lincoln* intended to search for it, and when about twenty miles **S. 60° E.** of its supposed position hove to and sounded with one hundred and eighty fathoms of line but found no bottom. She drifted to the ascribed latitude about three o'clock in the morning, but a dozen miles to the eastward, then steered a course that passed four miles north of its ascribed position at five o'clock a. m. with a clear horizon. At 7^h 45^m a. m., in latitude 59° 12′ and longitude 143° 05′ W., no soundings could be had with one hundred and eighty fathoms of line.*

When the International Telegraph Expedition visited Sitka in 1865, inquiry was made in regard to this rock or shoal, and it was stated by the Russian authorities that the company's steamer had been sent out a year or two before on a cruise of several weeks to investigate the question, and found no rock or shoal or even bottom within one hundred fathoms of the surface and a radius of thirty miles of the alleged position as laid down by Tebienkoff.

The opinion was expressed, by those consulted, that no such rock or shoal exists in the assigned position or very near that position.

In 1874 the U. S. Coast Survey schooner *Yukon* reached this vicinity in clear weather and with a moderate sea, and with a lookout aloft saw no signs of any rock or shoal. About twenty miles **SE.** by compass from its assigned position sounded, May 27th, at five in the afternoon, getting five hundred and seventy-five fathoms of line out without touching bottom.

That part of the Pacific Ocean included between the meridians of Yakutat Bay and Middleton Island and extending about one hundred miles off shore was formerly a favorite resort of the right-whale fishers, who named it the **Fairweather Ground.** Every mile of it has been repeatedly sailed over while standing off and on for whales; so that it is in the highest degree improbable that any bank or shoal sufficiently near the surface to break in ordinary weather should have remained unseen. A dry rock or islet is out of the question.

It is not impossible that there may be a bank in this vicinity, as Captain Alonzo Fisher, of the whale ship *William Gifford*, reports that he sunk and recovered a right whale on the locality assigned to the reef, in seventy-five fathoms. There is no evidence, however, that the whale touched bottom. If the position of the shoal be removed northward to within thirty miles of the mainland, as Arteaga supposed himself to be when the "appearance of a bank" was noticed, the probability of its existence is much increased, as it would then be much nearer water known to be of moderate depth and on a line, parallel with the main shore, on which several other dangers are supposed to be situated.

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* See COAST PILOT OF ALASKA, by Asst. George Davidson, U. S. Coast Survey, 8vo., Washington, 1869, pp. 148–9.

LIST OF CHARTS USEFUL FOR NAVIGATION

IN THE REGION COVERED BY PART I

OF THE ALASKA COAST PILOT.

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A LIST OF USEFUL CHARTS.

PRELIMINARY NOTE.

It was thought that navigators might derive benefit from the preparation of a list of charts which are actually available and can be purchased or ordered from dealers, and by the possession of which the master of a vessel may feel that he has, up to the date of this list, the latest information in regard to the region where he is bound. The names of a few Russian charts of particular value and for which there are no satisfactory English equivalents are included, since dealers can obtain them from the Hydrographic Office of the Russian Admiralty if they choose to take the trouble.

Tebienkoff's charts, though mentioned, are believed to be out of print and only obtainable at second-hand. Parties engaged in the trade to the northwest coast have printed several charts derived from Tebienkoff and other sources, for the private use of the masters of vessels employed in their trade. These charts also are unattainable except by favor. Most of them, while containing some new data in particular localities, are, on the whole, inferior to the originals from which they were derived. It will naturally be some time before the United States Coast Survey can survey, even in a superficial manner, the sixteen thousand miles of shore-line presented by the territory of Alaska, and to reproduce under its authority old charts known to be erroneous is not desirable. For some years, therefore, the navigator must rely on charts of a merely approximate character for a coast whose dangers may well call out all his watchfulness, prudence and seamanship.

The charts in the list are given, first, by locality in geographical order, second, by number under the authorities by whom they are published.

Only useful and obtainable charts are included.

LIST OF CHARTS RELATING TO THE NORTHWEST COAST OF AMERICA BETWEEN FUCA STRAIT AND YAKUTAT BAY.

Specially important charts are marked with an asterisk. P. O. S. means Pacific Ocean series. Subsketches on larger charts are marked ss.

TITLE.	AUTHORITY.	NUMBER.	DATE.
ALASKA, Gulf of.			
Mercator chart of the Pacific Ocean between Baranoff Island and Kadiak. [In Russian.] (Merkatorskaia karta vostochnakho okeana mezhdu ostrovami Baranovim i Kadiakskom.) Cape Ommaney to Kadiak.	Russian Hydrographic Department.	P. O. S. 9 1378	1847
Chart of the northwest coast of America, east and west from Yakutat Bay. [In Russian.] (Karta sievero zapadnakho berega Ameriki k'zapadu i vostoku ot zalifa Iakutat.) Lituya Bay to Laida Reef; Tebienkoff's Atlas.	Tebienkoff.	VII	1849
[See also U. S. Coast Survey list.]			
ALERT BAY, Vancouver Island.			
Alert Bay, Vancouver Island. G. H. Richards, R. N.	British Admiralty.	2067	1860–67
ALEXANDER ARCHIPELAGO.			
Mercator chart of the Pacific Ocean on the northwest coast of America, etc.* [In Russian.] (Merkatorskaia karta vostochnakho okeana s'sievero-zapadnim beregom Ameriki i pridegaiustchim k'nemu Koloshenskim arkhipelagom, etc., 1848.) General Chart of; north end Vancouver Island to Lituya Bay.	Russian Hydrographic Department.	1396	1848

TITLE.	AUTHORITY.	NUMBER.	DATE.
Chart of the northern inlets on the northwest coast of America, etc. [In Russian.] (Karta sievernih prolifoff NW. berega Ameriki s'opisi Vankuvera ispravlien kolioni morekhod, Novo Arkhangelsk, 1849.) North part; Cape Ommaney to Cape Fairweather. From Tebienkoff's Atlas.	Tebienkoff.	VIII	1849
Chart of the inlets on the northwest coast of America, etc. [In Russian.] (Karta prolifoff NW. berega Ameriki ot shiroti 54° do 56° s'opisi Vankuvera, etc.) Same source as preceding; middle part; Cape Knox to Cape Ommaney.	Tebienkoff.	IX	1849
Chart of the inlets on the northwest coast of America, etc. [In Russian.] (——— shiroti 51° do 54°, etc.) Same; southern part; Cape Scott to Cape Knox.	Tebienkoff.	X	1849
Mercator chart of the southern half of the Archipelago, etc. [In Russian.] (Merkatorskaia karta iuzhnoi polovini Koloshenskakho archipelaga, etc.) Middle part; Banks Island to Stikine River.	Russian Hydrographic Department.	No. 10, sh. d. 1493	1853
Mercator chart of the northern half of the Archipelago, etc. [In Russian.] (Merkatorskaia karta sievernoi polovini, etc.) Like preceding, but north part; Coronation Island to Chilkat River.	Russian Hydrographic Department.	No. 10, sh. c. 1494	1853
(Cordova Bay to Cross Sound, including the Koloshensk Archipelago; chiefly from Vancouver's survey in 1792. Corrected from a Russian chart published in 1853.)	British Admiralty.	2431	1865
(Port Simpson to Cross Sound, etc.) Same, with fly-leaf attached showing survey of Portland Canal. Revised edition of preceding.	British Admiralty.	2431	1882
(Southeast Coast of Alaska. Alexander Archipelago * * * Corrected from surveys by Commander R. W. Meade, jr., etc.) Important corrections, but poorly executed chart in photolithography. Later copies of this chart have a fly-leaf attached containing Pender's survey of Portland Canal.	United States Hydrographic Office.	225	1869
Same, with considerable additions in the northern part of the Archipelago from surveys by U. S. Naval officers.	United States Hydrographic Office.	225	1880
(Dixon entrance to Cape St. Elias.) Sheet 2 of "northwest coast of America" series, scale $\frac{1}{1200000}$, on the polyconic projection; editions in 1870, 1875, 1879, and a new edition in preparation; price fifty cents. outline copper plate 25.5 × 34.0 inches.	United States Coast Survey.	701	1879
ALIASKA PENINSULA.			
(Part of Aliaska Peninsula and adjacent islands from Coal Cape to Issannakh Strait.)	United States Coast Survey.	806	1882
ALPHA BAY.			
(Alpha Bay, British Columbia.) D. Pender, R. N.	British Admiralty.	1901 as.	1868–79
ALTHORP, PORT, AND ENTRANCE TO CROSS SOUND.			
Entrance to Cross Sound and Icy Strait. [In Russian.] (Whod v'prolif Lohtianoi.) In Atlas.	Tebienkoff.	VIII as.	1849
(Entrance to Cross Sound from Vancouver's Survey.) In U. S. Coast Survey Atlas of Harbor charts.	United States Coast Survey.	3	1869

TITLE.	AUTHORITY.	NUMBER.	DATE.
(Granite Cove, Port Althorp,) with a subsketch of Cross Sound with important corrections. Harbor charts of Alaska, issued by the U. S. Coast Survey.	United States Coast Survey.	741	1883
ALTUYA. *See* **LITUYA BAY.**			
AMAK ISLAND. *See* **Aliaska Peninsula.**			
ANCHOR COVE, British Columbia.			
(Anchor Cove, Skidegate Inlet, from observations by Staff Commander D. Pender, R. N.)	British Admiralty.	48 ss.	1872
ARMSTRONG, PORT. *See* **Conclusion, Port.**			
AUGUSTA, PORT, British Columbia.			
(Port Augusta, Vancouver Island.) From observations by G. H. Richards, R. N.	British Admiralty.	585	1860–80
BANKS, PORT, Baranoff Island.			
Anchoring place in Whale Bay or Port Banks. [In Russian.] (Iakorniia miesta v'bukhti Kitovoi [Por Bensk].) Tebienkoff's Atlas, 1849.	Tebienkoff.	VIII ss.	1849
(Whale Bay, from Tebienkoff's Atlas.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	3	1869
BARCLAY SOUND, V. I. *See also* **Sydney Inlet.**			
(Barclay Sound, Vancouver Island.) From observations by G. H. Richards, R. N. Adams 1884 Bartlett Cove Glacier Bay	British Admiralty.	592	1861–74
BAZAN, PORT, Prince of Wales Archipelago, Alaska.			
Bazan Harbor, from a sketch by Zarembo. [In Russian.] (Gavan Bazan * * * ocherk Zarembo.) Tebienkoff's Atlas.	Tebienkoff.	IX ss.	1849
(Port Bazan, from Tebienkoff's Atlas.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	1	1869
BEAVER CREEK, British Columbia.			
(Beaver Creek, Loughborough Inlet.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
BEAVER HARBOR, British Columbia.			
Beaver Harbor, Vancouver Island.	British Amiralty.	2067	1860–67
BECHER AND PEDDER BAYS, B. C.			
(Becher and Pedder Bays, Vancouver Island.) From observations by H. Kellett, R. N.	British Admiralty.	1906	1846–72
Plan on Imray's chart of NW. America.	Imray & Son.	ss.	1853
BELLA KULA, British Columbia.			
(Bela Kula Anchorage, Burke Channel.). D. Pender, R. N.	British Admiralty	1462	1872
BERING BAY. *See* **Dischantment Bay; Mulgrave Port,** *and* **St. Elias Alps.**			
BLAKENEY, PORT, British Columbia.			
(Port Blakeney, Morris Bay and adjacent channels, Milbank Sound.) D. Pender, R. N.	British Admiralty.	1462	1872

TITLE.	AUTHORITY.	NUMBER.	DATE.
BLUNDEN HARBOR, British Columbia.			
(Blunden Harbor, Queen Charlotte Sound.) From observations by D. Pender, R. N.	British Admiralty.	571	1863
BROUGHTON AND JOHNSTONE STRAITS, British Columbia.			
(Johnstone and Broughton Straits.) G. H. Richards, R. N.	British Admiralty.	581	1860–72
BROWN AND EDYE PASSAGES, British Columbia.			
(Brown and Edye Passages.) D. Pender, R. N.	British Admiralty.	2453	1879
BUCCANEER BAY, British Columbia.			
(Buccaneer Bay, Malaspina Strait, Thormanby Islands.)	British Admiralty.	579 ss.	1860–65
BUCARELI BAY OR PORT.			
Entrance, etc., to the Port of Bucareli, from the chart of La Perouse. [In Russian.] (W'hod ot iuga v' zalif Bukarelli * * * s'karti Laperusa.) In Tebienkoff's Atlas.	Tebienkoff.	IX ss.	1849
(Bucareli Bay, from a Russian chart.) U. S. Coast Survey Atlas of Harbor Charts.	United States Coast Survey.	1	1869
BULL HARBOR, British Columbia.			
Bull Harbor, Goletas Channel.	British Admiralty.	2067	1860–67
BURRARD INLET, British Columbia.			
Fraser River and Burrard Inlet, (Georgia Gulf.) G. H. Richards, R. N.	British Admiralty.	1922	1860–81
BUTE INLET. *See* **Georgia, Strait of, Sheet 2.**			
CAMELEON HARBOR, British Columbia.			
(Cameleon Harbor, Nodales Channel.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
CANAVERAL, PORT, British Columbia.			
(Port Canaveral, Principe Channel.) D. Pender, R. N.	British Admiralty.	2189	1868–81
CARTER BAY, British Columbia.			
(Carter Bay, Finlayson Channel.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–7
CHESLOKNU BAY. *See* **Kachekmak Bay.**			
X Chester-Port Hassler 1885			
CHILKAT RIVER. *See* **Lynn Canal.**			
x Cleveland Passage Pinta 1885			
CLAYOQUOT SOUND. *See* **Sydney Inlet.**			
COAL BAY. *See* **Kachekmak.**			
COGHLAN ANCHORAGE, British Columbia.			
(Coghlan Anchorage, Grenville Island.) D. Pender, R. N.	British Admiralty.	2189	1868–81
COLUMBIAN ARCHIPELAGO, British Columbia.			
(Cape Caution to Port Simpson, including Hecate Strait and part of Queen Charlotte Islands.) From observations by D. Pender and other officers of the Royal Navy. There are two editions, of which the later (1881) is much improved and greatly corrected and changed.	British Admiralty.	1923 A	1867–81

TITLE.	AUTHORITY.	NUMBER.	DATE.
Southern half; forming the complementary part of the preceding.	British Admiralty.	1923 B	1867–79
(Cape Flattery to Dixon Entrance.) No. 1 of "Northwest Coast of America" series. Outline copper plate; scale $\frac{1}{120000}$, 25.5 × 34 inches; price, fifty cents.	United States Coast Survey.	700	1869
CONCLUSION, PORT, Alaska.			
(Port Conclusion, from Vancouver's Chart. [In Russian.] (Port Konkliuzion * * * s'kart Vankuvera.) Tebienkoff's Atlas.	Tebienkoff.	IX ss.	1849
(Port Conclusion, from Vancouver's Survey.) U. S. Coast Survey Atlas of Harbor Charts.	Vancouver.	1	1869
CONSTANCE COVE, Vancouver Island.			
(Constance Cove.) G. H. Richards, R. N.	British Admiralty.	572	1858–82
COOK'S INLET. *See* **Kachekmak Bay.**			
CROSS HARBOR, Kruzoff Island *near* Sitka.			
Cross Harbor. [In Russian.] (Gavan Krestoffskaia.) Tebienkoff's Atlas.	Tebienkoff.	VIII ss.	1849
(Cross Harbor, from Tebienkoff's Atlas.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	3	1869
CROSS SOUND OR ICY STRAIT. *See* **Althorp, Port.**			
CULLEN HARBOR, British Columbia.			
(Cullen Harbor, Queen Charlotte Sound.) D. Pender, R. N.	British Admiralty.	571	1863
CUMSHEWAS HARBOR.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
CYPRESS HARBOR, British Columbia.			
(Cypress Harbor, Queen Charlotte Sound.) D Pender, R. N.	British Admiralty.	571	1863
DE FUCA, DE FONTE, DE FUENTES. *See* **Fuca.**			
DISENCHANTMENT BAY. *See* **Mulgrave, Port.**			
DEPARTURE BAY. *See* **Nanaimo Harbor** *and* **Departure Bay.**			
DOUGLAS HARBOR.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
DREW HARBOR, British Columbia.			
(Drew Harbor, Valdes Island.) D. Pender, R. N.	British Admiralty.	580 ss.	1860–80
DRAYTON HARBOR. *See* **Semiahmoo Bay.**			
DUNCAN BAY. *See* **Metlakatla Bay.**			
DUNGENESS, Washington Territory.			
(False Dungeness and New Dungeness.) U. S. Coast Survey Harbor Charts; sketch, scale $\frac{1}{30000}$, 10 × 22 inches; price fifteen cents.	United States Coast Survey.	646	1856
EDYE PASSAGE. *See* **Brown Passage.**			

TITLE.	AUTHORITY.	NUMBER.	DATE.
ENGLISH BAY. *See* **Kachekmak Bay** *and* **Graham, Port.**			
ENTRANCE ANCHORAGE.			
(Sydney Inlet to Natinat.) G. H. Richards, R. N.	British Admiralty.	584 ss.	1861–74
ESPERANZA INLET, British Columbia.			
(Esperanza and Nuchatlitz Inlets.) G. H. Richards, R. N.	British Admiralty.	589	1862
(Esperanza to Clayuquot.) G. H. Richards, R. N.	British Admiralty.	569	1862–71
ESQUIMALT HARBOR, British Columbia.			
Esquimalt Harbor, Vancouver Island.	Imray and Son.	ss.	1853
Same. G. H. Richards, R. N.	British Admiralty.	1897 *a*.	1860–80
Same, and Victoria Harbor. G. H. Richards, R. N.	British Admiralty.	576	1862–82
ETOLIN HARBOR, Wrangell Island, Alaska.			
Etolin Harbor, Wrangell Island. [In Russian.] (Gavan Etolin na ostrovie Vrangelia * * * s'karti Kapitana Zarembo, 1834 goda.) From Zarembo's chart of 1834.	Russian Hydrographic Department.	P. O. S. 10 1396 ss.	1848
(Bay of Etholine.) Derived in part from observations by the U. S. Navy.	United States Hydrographic Office.	225 ss.	1869
(Etoline Harbor, Wrangell Island * * *) From observations by G. Davidson and party. U. S. Coast Survey Harbor Charts of Alaska.	United States Coast Survey.	706	1869
Etoline Harbor 2 anchorage Hassler + Pinta 1885			
FITZHUGH SOUND. *See also* **Bellakula; Blakeney, Port; Klemtoo Passage; Nowish Cove;** *and* **Welcome Harbor.**			
(Fitzhugh and Smith Sounds.) Approaches to. From observations by D. Pender, R. N.	British Admiralty.	2448	1878
(Fitzhugh and Milbank Sounds); anchorages adjacent to. D. Pender, R. N.	British Admiralty.	1462	1872
× Farnham (cape) Bay Pinta 1886			
FONTE. *See* **FUCA.**			
× Farnitoge Channels Adams 1884			
FORWARD HARBOR, British Columbia.			
(Forward Harbor.) D. Pender, R. N.	British Admiralty.	630 ss.	1860
FRANÇAIS, PORT DE. *See* **Lituya Bay.**			
FRASER RIVER.			
(Fraser River and Burrard Inlet, Georgia Gulf.) G. H. Richards, R. N.	British Admiralty.	1922	1860–81
FRESHWATER BAY, Chatham Strait. *See also* **Wachusett Cove.**			
(Freshwater Bay.) R. W. Meade, jr., U. S. N., commanding U. S. S. *Saginaw*. Cor. 1885	United States Hydrographic Office.	225 ss.	1869
FRIENDLY COVE, Nutka Sound, British Columbia.			
Plan of Nutka. [In Russian.] (Plan zalif Nutka.)	Old Russian.	XXI ss.	(n. d.)
Same. G. H. Richards, R. N.	British Admiralty.	1916 ss.	1862–66
FRITZ COVE, Alaska.			
(Fritz Cove, Stephens Passage.) Surveyed by Lieut. F. M. Symonds, 1880.	United States Hydrographic Office.	883 ss.	1881
(Fritz Cove, Stephens Passage, Alaska.)	United States Coast Survey.	736	1883

TITLE.	AUTHORITY.	NUMBER.	DATE.
FUCA, STRAITS OF. (Fonte, Fuentes, de Fuca, etc.)			
(Strait of Juan de Fuca, surveyed by Capt. Henry Kellett, R. N., 1847. Haro and Rosario Straits, by Capt. G. H. Richards, R. N., 1858. Admiralty Inlet and Puget Sound, by the U. S. Exploring Expedition, 1841 * * *.)	British Admiralty.	1911	1847–81
(Juan de Fuca Strait.) From observations by G. H. Richards, R. N.	British Admiralty.	577	1862–81
(Same.) Compiled in the Hydrographic Bureau of the U. S. Navy Department from the preceding, on a scale of two miles to the inch, 30×44 inches; price seventy-five cents.	United States Hydrographic Office.	25	1873
GEORGIA, Gulf of.			
(Georgia Strait, Sheet 1; Georgia Strait to the NE. point of Texada Island.) G. H. Richards, R. N., and others.	British Admiralty.	579	1869–81
(——— Sheet 2; NE. point Texada Island to Johnstone Strait.) Continuation of the preceding. G. H. Richards, R. N.	British Admiralty.	580	1869–80
GOLDSTREAM HARBOR, B. C.			
(Goldstream Harbor.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
GOLETAS CHANNEL.			
(Goletas Channel, with passages leading into Queen Charlotte Sound * * *.)	British Admiralty.	555	1863–81
(Goletas Channel to Quatsino Sound * * *.)	British Admiralty.	582	1860–81
GORGE HARBOR, British Columbia.			
(Gorge Harbor, Cortes Island.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
GOWLLAND HARBOR, British Columbia.			
(Gowlland Harbor and Quathiaski Cove.) G. H. Richards, R. N.	British Admiralty.	2067	1860–67
GRAHAM, PORT. *See* **Kachekmak Bay.**			
GRANITE COVE. *See* **Althorp, Port.**			
GRAVES, PORT, British Columbia.			
(Port Graves, Gambier Island, Howe Sound.) G. H. Richards, R. N.	British Admiralty.	585	1860–80
GRIFFIN BAY, British Columbia.			
(Griffin Bay, Haro Archipelago.) G. H. Richards, R. N.	British Admiralty.	611	1858–81
GULF OF ALASKA. *See* **Alaska, Gulf of.**			
HARO STRAIT. *See also* **Fuca Strait.**			
(Haro and Rosario Straits.) G. H. Richards, R. N.	British Admiralty.	2689	1859–81
(Haro Strait and Middle Channel.) G. H. Richards, R. N.	British Admiralty.	2840	1860–82
HARVEY, PORT, British Columbia.			
(Port Harvey, Johnstone Strait.) G. H. Richards, R. N.	British Admiralty.	634	1860
× Hassler Harbor Hassler 1883			
HECATE COVE. *See* **Quatsino Sound.**			
HELENA BAY, Chichagoff Island. *See* **Ilina Bay.**			
HERRING BAY. *See* **Kachekmak Bay.**			

TITLE.	AUTHORITY.	NUMBER.	DATE.
HESQUIAT HARBOR.			
(Esperanza to Clayuquot, etc.) G. H. Richards, R. N.	British Admiralty.	569 ss.	1862–74
HIGHFIELD, POINT; Anchorage at; Wrangell Island, Alaska.			
(Anchorage off Point Highfield, by F. O. Simpson, master H. M. S. *Devastation*, 1862.)	British Admiralty.	2431 ss.	1853–82
(Anchorage off Point Highfield, from British Admiralty Chart No. 2431.) U. S. Coast Survey Atlas of Harbor Charts.	Simpson.	3	1869
HOLMES BAY, British Columbia.			
(Holmes Bay, Princess Royal Island.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
HOOCHINOO. *See* **Kootz-na-hoo.**			
HOONIAH HARBOR, Icy Strait.			
(Hoonyah Harbor, Cross Sound.) Surveyed by Lieut. F. M. Symonds, 1880.	United States Hydrographic Office.	883 ss.	1881
HOUSTON STEWART CHANNEL.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
HOWE SOUND. *See* **Georgia Strait, Sheet I.**			
ILINA BAY, Chichagoff Island, Alaska.			
Chart of Ilina Bay. [In Russian.] (Karta zaliva Ilina nahodiast-chagosia na ostrovie Iakobie pri ostrovie Sitkhi * * s'karti shturmana Ilina.) From the chart of Mate Ilina.	Russian Hydrographic Office.	XVIII	(n. d.)
INLAND PASSAGE, British Columbia. *See also* **Columbian Archipelago.**			
NOTE.—The following charts cover the Inland Passage from Victoria to Port Simpson in their order northward: Numbers 1911, 1917, 1923 B, and 1923 A cover the ground, in general, on a moderate scale; numbers 2689, 577, 579, 580, 538, 581, 582, 555, 2448, 2449, 2453, and 2426 refer to portions of the same passage on a larger scale. There are numerous harbor charts and charts of adjacent passages to be found under their names elsewhere in this list, but not admitted under this head. Those here are separately mentioned elsewhere. These are the latest editions.			
Fuca Strait, etc.	British Admiralty.	1911	1881
Vancouver Island.	" "	1917	1879
Fuca Strait.	" "	577	1881
Haro and Rosario Straits.	" "	2689	1881
Gulf of Georgia, SE. sheet.	" "	579	1881
" " NW. "	" "	580	1880
Seymour Narrows. (See chart in this volume.)	" "	538	1867
Johnstone Strait.	" "	581	1872
Goletas Channel, etc.	" "	582	1881
" " (local, enlarged).	" "	555	1881
Vicinity of Cape Caution (local, enlarged).	" "	2448	1878
Inland Passage, Cape Caution to Port Simpson, south half.	" "	1923 B	1879
Lama and Seaforth Channels.	" "	2449	1872

TITLE.	AUTHORITY.	NUMBER.	DATE.
Inland Passage, Cape Caution to Port Simpson, north half.	British Admiralty.	1923 A	1881
Brown and Edye Passage.	" "	2453	1879
Port Simpson and vicinity.	" "	2426	1872
ISLAND HARBOR, Barclay Sound, British Columbia.			
(Island Harbor, 1861.) G. H. Richards R. N.	British Admiralty.	584 ss.	1861–74
IYOUKEEN COVE.			
(Iyoukeen Cove, from a sketch by G. Davidson * * * .) Harbor Charts of Alaska.	United States Coast Survey.	707	1869
JERVIS INLET. *See* **Georgia Strait,** *Sheet* **1.**			
JOHNSTONE STRAIT, British Columbia.			
(Johnstone and Broughton Straits); Vancouver Island.	British Admiralty.	581	1860–72
JUAN DE FUCA. *See* **Fuca.**			
JUNEAU HARBOR.			
(Juneau Harbor,) Gastineau Channel, Stephens Passage. U. S. naval officers.	United States Coast Survey.	737	1883
KACHEKMAK BAY, Cook's Inlet.			
(Kachekmak Bay, Cook's Inlet.) From Russian sources with corrections.	United States Coast Survey.	766	1883
KAIGAHNEE HARBORS and STRAIT, Cordova Bay. *See also* **Tlevak Strait.**			
Kaigahnee Harbors, Prince of Wales Archipelago. [In Russian.] (Gavan Kaigan v'arkhipelagie Prints Vallieskakho * * * s'karti Kapitana Etolina 1833 goda.) From observations by Etolin in 1833.	Russian Hydrographic Department.	P. O. S. 1396 ss.	1884
Kaigahnee, etc., from Etolin's Chart. [In Russian.] (Kaigani muis * * * s'karti Etolina.) Tebienkoff's Atlas.	Tebienkoff.	IX ss.	1849
(Kaigan Harbor, from Tebenkoff's Atlas.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	1	1869
KLASKINO INLET, British Columbia.			
(Klaskino and Klaskish Inlets and Anchorages, Vancouver Island.) D. Pender, R. N.	British Admiralty.	590	1862
KLASKISH INLET. *See* **Klaskino Inlet.**			
KLEMTOO PASSAGE, British Columbia.			
(Klemtoo Passage and Anchorage.) D. Pender, R. N.	British Admiralty.	1462	1872
KLOKACHEFF. *See* **Salisbury Sound.**			
KLEWNUGGIT INLET, British Columbia.			
(Klewnuggit Inlet, Grenville Channel.) G. H. Richards, R. N.	British Admiralty.	2189	1868–81
KOOTZNAHOO INLET.			
(Kootsnoo Rapids, from a sketch by G. Davidson.) Harbor Charts of Alaska.	United States Coast Survey.	706	1869
(Plan of Kootznahoo Roads and Koteosok Harbor.) From observations by R. W. Meade, jr., U. S. N.	United States Hydrographic Office.	225 ss.	1869

TITLE.	AUTHORITY.	NUMBER.	DATE.
(Kootznahoo Roads and Koteosok Harbor.) Corrected to 1880 by U. S. N. officers.	United States Hydrograpic Office.	882 ss.	1881
KRESTOFF, PORT. *See* **Cross Harbor.**			
KOPRINO HARBOR.			
(Quatsino Sound, etc.) G. H. Richards, R. N.	British Admiralty.	570 ss.	1862
KUPER, PORT.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
KWATHIASKI COVE. *See* **Quathiaski Cove.**			
KYNUMPT HARBOR, British Columbia.			
(Kynumpt Harbor, Seaforth Channel.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
KYUQUOT SOUND, British Columbia. *See also* **Quatsino to Esperanza.**			
(Kyuquot Sound, W. side Vancouver Island.) G. H. Richards, R. N.	British Admiralty.	717	1863–80
LAMA PASSAGE, British Columbia.			
(Lama Passage and Seaforth Channel.) D. Pender, R. N.	British Admiralty.	2449	1872
LINDENBERG HARBOR, Peril Strait, Alaska.			
(Lindenberg Harbor, from a sketch by G. Davidson.) Harbor Charts of Alaska. Printed 1895	United States Coast Survey.	707	1869
LITUYA BAY or PORT DES FRANÇAIS, Alaska.			
Chart of Lituya Bay, from La Perouse. [In Russian.] (Karta w'hoda v'zalif L'tuya * * * s'karti Laperuza.) Tebienkoff's Atlas, from La Perouse.	Tebienkoff.	VII ss.	1849
(Altuya Bay, from La Perouse's Survey.) U. S. Coast Survey Atlas of Harbor Charts.	La Perouse.	4	1869
(Sketch of Lituya Bay, Alaska, 1875.) From observations by W. H. Dall and party, and from La Perouse. Harbor Charts of Alaska.	United States Coast Survey.	710	1875
(Sketch of entrance to Lituya Bay, Alaska, 1875.) From observations by W. H. Dall and party in 1874.) Harbor Charts of Alaska.	United States Coast Survey.	710	1875
LOUGHBOROUGH INLET. *See* **Georgia Strait, Sheet 2.**			
LOWE INLET, British Columbia.			
(Lowe Inlet, Grenville Channel.) D. Pender, R. N.	British Admiralty.	2189	1868–81
LYNN CANAL, Alaska.			
(Lynn Canal, Chilkat River and Chilkoot Inlet.) F. M. Symonds, U. S. N.	United States Hydrographic Office.	883	1881
McLAUGHLIN, PORT, British Columbia.			
(McLaughlin Bay, Lama Passage.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
MAPLE BAY.			
(Maple Bay.) G. H. Richards, R. N.	British Admiralty.	714	1859–81

TITLE.	AUTHORITY.	NUMBER.	DATE.
Mary Pt anchorage Hassler 1858			
MARY, PORT; west coast of Kruzoff Island, Alaska.			
Shelikoff Bay or Port Mary, etc. [In Russian.] (V'zalifie Shelikhova ili Port Meri nebolshoi zalifets udobnii dlia iakornoi stoianki, opisannii Leitenant Rikordom i shturman Khliebnikovim v' 1810 * * *.) A small cove in Port Mary, convenient for anchorage, from observations by Rikord and Khliebnikoff in 1810.	Russian Hydrographic Department.	P. O. S. 9, 1378 ss.	1847
MASSET HARBOR.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
MENZIES BAY, British Columbia.			
(Menzies Bay, Discovery Passage.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
METLA-KATLA BAY, British Columbia.			
(Metla-Katla Bay.) Copied from British Admiralty Chart No. 364.	United States Hydrographic Office.	259	1870
(Duncan Bay and Metlah-Catlah Bay, surveyed by Capt. G. H. Richards, R. N., etc.) Corrected to 1880.	British Admiralty.	364	1862–80
MIDDLE CHANNEL.			
(Haro Strait and Middle Channel.) G. H. Richards, R. N.	British Admiralty.	2840	1860–82
MITCHELL HARBOR.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
MOLLER, PORT. *See* **Aliaska Peninsula.**			
MORRIS BAY. *See* **Klemtoo Passage.**			
MULGRAVE, PORT, Yakutat Bay, Alaska; and vicinity.			
Rurik Harbor in Yakutat Bay, etc. [In Russian.] (Gavan Riurika v'zalif Iakutat s'opisi leitenanta Khromchenko, 1823. * * *.) From observations by Khromchenko in 1823.	Russian Hydrographic Department.	P. O. S. 9, 1378 ss.	1847
Chart of anchorage, Yakutat Bay, etc. [In Russian.] (Karta iakornih miest zalifa Iakutat, etc.) Tebienkoff's Atlas.	Tebienkoff.	VII ss.	1849
(Port Mulgrave, from Russian charts.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	4	1869
(Port Mulgrave, Yakutat Bay, Alaska, 1875.) From observations by W. H. Dall and party in 1874, with a subsketch of the bay included. Harbor Charts of Alaska. Cor. by Francis 1884	United States Coast Survey.	711	1875
NAAS BAY AND RIVER, British Columbia.			
(Nass Bay, etc.) D. Pender, R. N.	British Admiralty.	2190	1872
(Sketch of the Nass River, etc.)	British Admiralty.	2190 ss.	1872
NAMU HARBOR, British Columbia.			
(Namu Harbor, Fitzhugh Sound.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
NANAIMO HARBOR, British Columbia.			
(Nanaimo Harbor, etc.) G. H. Richards, R. N.	British Admiralty.	573	1862–81
(Nanaimo Harbor and Departure Bay, etc.) G. H. Richards, R. N.	British Admiralty.	2512	1859–81

TITLE.	AUTHORITY.	NUMBER.	DATE.
NANOOSE HARBOR, British Columbia.			
(Nanoose Harbor.) G. H. Richards, R. N.	British Admiralty.	585	1860–80
NASPARTI INLET, British Columbia.			
(Nasparti and Ou-ou-kinsh Inlets.) G. H. Richards, R. N.	British Admiralty.	716	1863
NASS BAY AND RIVER. *See* **Naas Bay.**			
NAVAL RESERVE, Vancouver Island.			
(Naval Reserve.) G. H. Richards, R. N.	British Admiralty.	572 A.	1863–82
NEEAH BAY, Washington Territory. *See also* **San Juan Port.**			
(Cape Flattery and Neeah Harbors.) Chart 14 x 17 inches, scale $\frac{1}{40000}$, price 20 cents, several editions.	United States Coast Survey.	645	1853–79
NEVILLE, PORT, British Columbia.			
(Port Neville.) G. H. Richards, R. N.	British Admiralty.	630	1860
NIMPKISH RIVER, British Columbia.			
(Entrance to Nimpkish River.) G. H. Richards, R. N.	British Admiralty.	2067	1860–67
NOOTKA. *See* **Nutka** *and also* **Esperanza Inlet.**			
NORFOLK SOUND. *See* **Sitka.**			
NORTHWEST COAST OF AMERICA. *See* **Alexander** *and* **Columbian Archipelagos.**			
(Queen Charlotte Island to Cape Mendocino.)	Imray & Son.	——	1853
(Côte nord-ouest de l'Amérique, etc.) Covers Queen Charlotte Islands to California.	French Admiralty.	1979	1862
(Cape Fairweather to Lake Nicaragua.)	Spanish Admiralty.	470	1863
(Northwest Coast of America, Sheet No. 1, Cape Flattery to Dixon Entrance.)	United States Coast Survey.	700	1870
(Same, Sheet No. 2, Dixon Entrance to Cape St. Elias.)	United States Coast Survey.	701	1870
(Same, Sheet No. 3, Icy Bay to Seven Islands.)	United States Coast Survey.	702	1870
NOWISH COVE, British Columbia.			
(Nowish Cove, Finlayson Channel.) D. Pender, R. N.	British Admiralty.	1462	1872
NUCHATLITZ INLET. *See* **Esperanza.**			
NUTKA SOUND, Vancouver Island, British Columbia.			
(Nootka Sound, etc.) Compiled from Cook, Vancouver, and a Spanish MS., with a plan of Friendly Cove by Belcher.	British Admiralty.	1916	1849–66
(Nootka Sound * * *.) On large sheet of "Northwest Coast of America," by Imray.	Imray & Son.	ss.	1853
(Nootka Sound * * *.) G. H. Richards, R. N.	British Admiralty.	1916	1862–66
OGDEN CHANNEL, British Columbia.			
(Ogden Channel, with anchorages between Cape Caution and Port Simpson.) From observations by Daniel Pender, R. N.	British Admiralty.	1901	1868–79
OLGA STRAIT. *See* **Salisbury Sound.**			
OSBORN BAY.			
(Osborn Bay.) G. H. Richards, R. N.	British Admiralty.	714	1859–81

TITLE.	AUTHORITY.	NUMBER.	DATE.
OTTER COVE. British Columbia. (Otter Cove, Discovery Passage.)	British Admiralty.	580 ss.	1862–80
OU-OU-KINSH. *See* **Nasparti.**			
OYSTER HARBOR. British Columbia. (Oyster and Telegraph Harbor), Vancouver Island. G. H. Richards, R. N.	British Admiralty.	714	1859–81
PARRY PASSAGE. (Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–18
PEDDER BAY. *See* **Becher and Pedder Bays.**			
PENDER HARBOR, British Columbia. (Pender Harbor, Strait of Georgia.) North shore. G. H. Richards, R. N.	British Admiralty.	585	1860–80
PERIL STRAIT, Alaska. *See also* **Sitka.** (Pogibshi Channel or Peril Strait.) G. C. Hanus, U. S. N.	United States Hydrographic Office.	882 ss.	1881
PHIPPS CAPE. *See* **Mulgrave, Port.**			
PLUMPER COVE. *See* **Shoal Channel.**			
PORTAGE COVE, Lynn Canal. (Portage Bay, Chilkoot Inlet.) G. C. Hanus, U. S. N.	United States Hydrographic Office.	882 ss.	1881
PORT DES FRANÇAIS. *See* **Lituya Bay.**			
PRIDEAUX HAVEN, British Columbia. (Prideaux Haven, Desolation Sound.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
PROTECTION, PORT, Alaska. (Port Protection, from Vancouver's Survey.) U. S. Coast Survey Atlas of Harbor Charts.	Vancouver.	3	1869
PYRAMID ISLAND HARBOR, Lynn Canal. (Pyramid Island Harbor.) Mouth of Chilkat River. From observations by R. W. Meade, jr., U. S. N.	United States Hydrographic Office.	225 ss.	1869
QLAWDZEET ANCHORAGE, British Columbia. (Qlawdzeet Anchorage, Brown Passage.) D. Pender, R. N.	British Admiralty.	2453 ss.	1872–79
QUATHIASKI COVE, British Columbia. (Quathiaski Cove and Gowlland Harbor), Valdes Island. G. H. Richards, R. N.	British Admiralty.	2067	1860–67
QUATSINO SOUND, British Columbia. (Quatsino to Esperanza, including Kyuquot Sound.) G. H. Richards, R. N.	British Admiralty.	583	1863–80
(Quatsino Sound.) G. H. Richards, R. N.	British Admiralty.	570	1862
QUEEN CHARLOTTE ISLANDS, British Columbia. *See also* **Skidegate Inlet.** Chart of the channels, etc., between latitudes 51° and 54° 30′, from Vancouver. [In Russian.] (Karta prolivoff N. W. berega Ameriki ot shiroti 51° do 54° 30′ opisi Vankuvera * * *.) Tebienkoff's Atlas. Includes the adjacent parts of the mainland.	Tebienkoff.	X	1849

TITLE.	AUTHORITY.	NUMBER.	DATE.
(America, NW. Coast. Plans of Ports, etc., in Queen Charlotte Islands.) Surveys by the Virago, etc.), 1852–3, with corrections in later editions from new information.	British Admiralty.	2168	1856–81
(Vancouver Island to Cordova Bay, etc.) Includes coast adjacent. Early editions of this chart exceedingly imperfect and noted as unreliable on later editions.	British Admiralty.	2430	1860–81
(Queen Charlotte Islands, Hecate Strait and Dixon Entrance.) From British and United States surveys to 1881.	United States Hydrographic Office.	904	1881
QUEEN'S COVE, British Columbia.			
(Queen's Cove, Esperanza Inlet.) G. H. Richards, R. N.	British Admiralty.	589 ss.	1862
REFUGE BAY, British Columbia.			
(Refuge Bay, Edye Passage.) D. Pender, R. N., etc.	British Admiralty.	2453 ss.	1872–79
(Sydney Inlet to Natinat.) G. H. Richards, R. N.	British Admiralty.	584 ss.	1861–74
REVILLAGIGEDO CHANNEL.			
(Revillagigedo Channel or Tongass Narrows, Alaska), and Ward Cove. From a sketch by Pilot W. E. George, etc.	United States Coast Survey.	712	1883
ROCHE HARBOR, British Columbia.			
(Roche Harbor, Haro Strait.) G. H. Richards, R. N.	British Admiralty.	602	1857–69
ROSARIO STRAIT. *See* **Haro** *and* **Fuca Straits.**			
ROSE HARBOR.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81
RURIK HARBOR. *See* **Mulgrave, Port.**			
SAFETY COVE, British Columbia.			
(Safety Cove, Fitzhugh Sound.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
SAINT ELIAS, MOUNT, and vicinity.			
(Sketch of the Saint Elias Alpine region, Alaska, 1875.) From observations by W. H. Dall and party in 1874. Harbor Charts of Alaska.	United States Coast Survey.	709	1875
SALISBURY SOUND, Alexander Archipelago, Alaska.			
Passage to Olga Strait, etc. [In Russian.] (W'hod v'prolif S. Olgi.) Tebienkoff's Atlas. Appears under the name of Olga Strait erroneously.	Tebienkoff.	VIII ss.	1849
(Olga Gulf, from Tebienkoff's Atlas.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	3	1869
SAN JUAN, PORT, Vancouver Island, British Columbia.			
(Port San Juan * * *.) On Imray and Son's large chart; derived from Wood?	Imray and Son.	ss.	1853
(Port San Juan * * *.) J. Wood, R. N.	British Admiralty.	1910	1847–64
SANNAKH ISLAND. *See* **Aliaska Peninsula.**			
SCHOONER RETREAT, British Columbia.			
(Schooner Retreat, Fitzhugh Sound.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79

TITLE.	AUTHORITY.	NUMBER.	DATE.
SCHULZE COVE, Fish Bay.			
(Schulze Cove, Rubia Bay.) From observations by Lieut. F. M. Symonds, U. S. N.	United States Hydrographic Office.	883 ss.	1881
" " adams 1884			
SEAFORTH CHANNEL. *See* **Lama Passage.**			
SECURITY BAY, Alaska.			
(Security Bay), Kuiu Island, Alexander Archipelago. R. W. Meade, jr., U. S. N.	United States Hydrographic Office.	225 ss.	1869
(Security Bay, Kuiu Island, Chatham Strait, Alaska.) From observations by the U. S. Navy.	United States Coast Survey.	723	1883
or Porta 1885			
SEMIAHMOO BAY.			
(Semiahmoo Bay and Drayton Harbor.) G. H. Richards, R. N.	British Admiralty.	2627	1857
SEYMOUR NARROWS, British Columbia.			
(Seymour Narrows, Discovery Passage.) G. H. Richards, R. N.	British Admiralty.	538	1864–67
SHOAL CHANNEL, British Columbia.			
(Shoal Channel and Plumper Cove, Howe Sound.) G. H. Richards, R. N.	British Admiralty.	585	1860–80
SHUMAGIN ISLANDS. *See* **Aliaska Peninsula.**			
SHUSHARTIE BAY or PORT, British Columbia.			
(Shucartie Bay, Vancouver Island.) G. H. Richards, R. N.	British Admiralty.	2067	1851–67
SIMPSON, PORT, British Columbia.			
(Port Simpson, and adjacent anchorages.) D. Pender, R. N. Later editions much improved.	British Admiralty.	2426	1868–72
SITKA, BARANOFF ISLAND, Alaska, and vicinity.			
Chart showing the entrances to New Archangel, Sitka Sound, Salisbury Sound, and Peril Straits, by Vasilieff, senior, in 1809, and Vasilieff, junior, in 1833. [In Russian.] (Karta w'hodof k'Novo-Arkhangelskomu portu ch'res zundi Sitkhu, Klokacheva i prolif Pogibshii. Sostavlena s'opisi shturmanoff Vasilieva 1° v' 1809 i Vasilieva 2° v' 1833 * * * 1848.) The best chart of this part of Alaska.	Russian Hydrographic Department.	P. O. S. 10 1397	1848
(Sitka Sound [the Norfolk Sound of Vancouver], from the Russian chart of 1848.) With additions from English sources, nearly all of which are erroneous; otherwise (up to 1882) the same as Russian Hydrographic Chart No. 1397, which is decidedly preferable to the earlier editions of this chart. The last (1882) edition, however, incorporates the U. S. naval data for Sitka and vicinity with subsketch of Symonds Bay.	British Admiralty.	2337	1854–82
(Sitka or New Arkhangel, from a Russian plan by Captain Yassilieff, 1850.) Bad; now superseded, as noted below.	British Admiralty.	2348	1850
(Sitka Harbor and Approaches, Alaska.) Survey by Lieut. F. M. Symonds and Master G. C. Hanus, U. S. N., etc., 1879. Best chart of the harbor of Sitka and interior approaches; 17×23 inches, scale 1/10000; photolithograph, price twenty-five cents.	United States Coast Survey.	708	1881
Same; reproduced on copper.	British Admiralty.	2348	1882
do. of New Strait adams 1884			

Title.	Authority.	Number.	Date.
SKIDEGATE INLET, British Columbia. (Skidegate Inlet, Queen Charlotte Islands.) D. Pender, R. N.	British Admiralty.	48	1868–72
SKINCUTTLE INLET, B. C. (Skincuttle Inlet.)	British Admiralty.	2168	1881
SMITH SOUND. *See* **Fitzhugh Sound.**			
SOOKE INLET, British Columbia. (Sooke Inlet, Vancouver Island.) D. Pender, R. N.	British Admiralty.	1907	1864
SPASSKIA, PORT, Chichagoff Island, Alaska. (Port Spaskia, surveyed by Mate Bunoff.) U. S. Coast Survey Atlas of Harbor Charts, 1869.	Bunoff.	3	1869
SQUIRREL COVE, British Columbia. (Squirrel Cove, Cortes Island.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
STAKHIN. *See* **Stikine.**			
+ St Johns Harbor Garrison Ld. Adams 1854 **STEPHENS, PORT, British Columbia.** (Stephens, Port, Principe Island.) D. Pender, R. N.	British Admiralty.	2189	1868–81
STEWART, PORT, Alaska. (Port Stewart, from Vancouver's survey.) U. S. Coast Survey Atlas of Harbor Charts.	United States Coast Survey.	1	1869
STUART ANCHORAGE. (Stuart Anchorage.) D. Pender, R. N.	British Admiralty.	1901 ss.	1868–79
STUART CHANNEL. (Stuart Channel, etc.) G. H. Richards, R. N.	British Admiralty.	714	1859–81
SUQUASH ANCHORAGE, Queen Charlotte Sound, British Columbia. (Johnstone and Broughton Straits.)	British Admiralty.	581 ss.	1872
SWANSON BAY, Chatham Strait. (Swanson's Harbor.) G. C. Hanus, U. S. N.	United States Hydrographic Office.	882 ss.	1881
SYDNEY INLET, British Columbia. (Sydney Inlet to Natinat, including Clayoquot and Barclay Sounds.) G. H. Richards, R. N.	British Admiralty.	584	1861–74
SYMONDS BAY. *See also* **Sitka.** (Symonds Bay, Sitka Sound.) F. M. Symonds and G. C. Hanus, U. S. N.	U. S. Coast and Geodetic Survey.	724	1880
TAKU HARBOR, Stephens Passage, Alaska. (Takou Harbor.) R. W. Meade, jr., U. S. N.	United States Hydrographic Office.	225 ss.	1869
TAKUSH HARBOR, Smith Sound, British Columbia. (Takush Harbour, Smith Sound.) D. Pender, R. N., etc.	British Admiralty.	2448 ss.	1878
TAMGAS HARBOR, Gravina Islands, Alaska. Tamgas Harbor, Gravina Islands, etc. [In Russian.] (Gavan Tamgas na ostrovie Gravinna * * * s'karti Kapitana Etolina 1833 goda.) From observations by Etolin.	Russian Hydrographic Department.	P. O. S. 10 1396 ss.	1848
" Hassler 1853			

TITLE.	AUTHORITY.	NUMBER.	DATE.
Tamgas Harbor, Gravina Islands, etc. [In Russian.] (Gavan Tamgas * * * s'karti Etolina.) Tebienkoff's Atlas.	Tebienkoff.	IX ss.	1849
(Tomgas Harbor, from Tebenkoff's Atlas.) U. S. Coast Survey Atlas of Harbor Charts.	Tebienkoff.	1	1869
TELEGRAPH HARBOR. *See* **Oyster Harbor.**			
TLEVAK STRAIT. *See also* **Kaigahnee Strait.**			
(Tlevak and connecting straits from Cape Muzon to Tlevak Narrows, with subsketch of Howkan Straits, including American Bay.) H. E. Nichols, U. S. N., etc.	United States Coast Survey.	713	1883
TOMGAS. *See* **Tongass** *and* **Tamgas.**			
TONGASS HARBOR, Alaska.			
(Passages to Fort Tomgas.) Showing harbor and fort. From observations by G. Davidson and party. Harbor Charts of Atlas.	United States Coast Survey.	707	1869
" " Harbor 1883			
TONGASS NARROWS. *See* **Revillagigedo Channel.**			
TOWNSEND, PORT, Washington Territory.			
(Port Townsend, etc.) Scale $\frac{1}{40000}$, 11×14 inches, price 15 cents.	United States Coast Survey.	647	1879
TRACY HARBOR, British Columbia.			
(Tracy Harbor, Queen Charlotte Islands.) D. Pender, R. N.	British Admiralty.	571	1863
TRIBUNE BAY, British Columbia.			
(Tribune Bay, Hornby Island.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
TRINCOMALIE CHANNEL			
(Trincomalie Channel.) G. H. Richards, R. N.	British Admiralty.	714	1859–81
TUCKER BAY, British Columbia.			
(Tucker Bay, Lasqueti Island.) G. H. Richards, R. N.	British Admiralty.	579	1860–81
UCHUCKLESIT, British Columbia.			
(Uchucklesit and Refuge Cove, Sydney Inlet.) G. H. Richards, R. N.	British Admiralty.	584 ss.	1861–74
VANCOUVER ISLAND. *See also* **British Columbia** *and* **NW. Coast of America.**			
Chart of the Quadra and Vancouver Islands. [In Russian.] (Karta ostrova Kwadra i Vankuvera, s'opisi Vankuvera * * * 1849.) Tebienkoff's Atlas. Cape Flattery to Scott Islands.	Tebienkoff.	XI	1849
(Esperanza to Clayoquot, etc.) G. H. Richards, R. N.	British Admiralty.	569	1862–71
(Vancouver Island and adjacent shores of British Columbia.) G. H. Richards, R. N.	British Admiralty.	1917	1859–79
(Vancouver Island, Semiahmoo Bay and Drayton Harbour.) G. H. Richards, R. N.	British Admiralty.	2627	1857
VICTORIA, VANCOUVER ISLAND, Brit. Col.			
(Victoria Harbour.) Subsketch on large general chart.	Imray & Son.	ss.	1853
(Esquimalt and Victoria Harbours, etc.) G. H. Richards, R. N.	British Admiralty.	576	1861–82
(Victoria Harbour, etc.) G. H. Richards, R. N.	British Admiralty.	1897 *b.*	1860–82
VIRAGO SOUND.			
(Plans of Ports, etc., in Queen Charlotte Islands.) Inskip and others, R. N.	British Admiralty.	2168	1852–81

TITLE.	AUTHORITY.	NUMBER.	DATE.
WACHUSETT COVE, Alaska. (Wachusett Cove, Freshwater Bay), Chatham Strait. By U. S. naval officers.	United States Coast Survey.	734	1883
WADDINGTON HARBOR, Bute Inlet, British Columbia. (Waddington Harbor at head of Bute Inlet.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
WALSH COVE, British Columbia. (Walsh Cove, Vancouver Island.) G. H. Richards, R. N.	British Admiralty.	580 ss.	1860–80
WARD COVE, Alaska. (Ward Cove, Tongass Narrows.) T. Dix Bolles, U. S. N. Cor to Hooker 1884	United States Coast Survey.	712 ss.	1883
WASHINGTON ISLANDS. *See* **Queen Charlotte Islands.**			
WELCOME HARBOR, British Columbia. (Welcome Harbor, Fitzhugh Sound.) D. Pender, R. N.	British Admiralty.	1462	1872
WHALE BAY. *See* **Banks, Port.**			
WHITESTONE NARROWS, Neva Strait, Alaska. (Whitestone Narrows, Nevski Strait.) G. C. Hanus, U. S. N. " Adams 1884	United States Hydrographic Office.	882 ss.	1881
WHITEWATER BAY, Alaska. (Whitewater Bay, Chatham Strait.) Officers U. S. N.	United States Coast Survey.	726	1883
WILLIAM HENRY BAY, Lynn Canal. (William Henry Harbor, Lynn Canal.) G. C. Hanus, U. S. N.	United States Hydrographic Office.	882 ss.	1881
WILLOUGHBY COVE, Cross Sound. (Willoughby Cove, Lemesurier Island, Cross Sound.) G. C. Hanus, U. S. N.	United States Hydrographic Office.	882 ss.	1881
WOEWODSKI HARBOR, Admiralty Island, Alaska. Woewodski Harbor, etc. [In Russian.] (Gavan Woewodskakho na ostrovie Admiralteistva * * * s'karti Kapitana Zarembo 1838 goda.) From observations by Captain Zarembo.	Russian Hydrographic Department.	P. O. S. 10 1396 ss.	1848
WRANGELL STRAIT, Alexander Archipelago, Alaska. Mercator Chart of Wrangell Strait, etc. [In Russian.] (Merkatorskaia karta prolifa Wrangelia v'sievernih Koloshenskih prolivah. Sniata s'karti G. Lindenberga i gravinovana v'hydrograficheskom departamentie morskakho ministerstva, 1850.) From observations by Lindenberg. Chart on large scale.	Russian Hydrographic Department.	P.O.S. 10*b* 1441	1850
(Plan of Wrangell Straits.) From observations by R. W. Meade, jr., U. S. N., etc.	United States Hydrodrographic Office.	225 ss.	1869–80
(Reconnaissance of Wrangell Straits, Alaska, by the party under the command of Lieut. Com'd'r H. E. Nichols, U. S. N., Assistant Coast and Geodetic Survey, 1881.) " Adams 1884	United States Coast Survey.	722	1883
YAKUTAT. *See* **Mulgrave, Port.**			

CHARTS ISSUED BY THE UNITED STATES COAST AND GEODETIC SURVEY.

NOTE.

All the Alaskan charts of the survey are included.

The charts embraced in the following Catalogue are classed as "Finished" and "Preliminary."

The "Finished" charts are printed from engraved plates and embody all information furnished by the survey, to the minutest details.

The "Preliminary" charts are those issued as soon as possible after the surveys, in whole or in part, have been made, and are used to supply the pressing demands of navigation pending the publication of the "Finished" charts. They are either engraved or photolithographed. The latter are marked L.

The charts in this list are various in character, according to the objects which they are designed to subserve and the amount of information accessible. The most important distinctions are the following:

1. SAILING CHARTS, on a scale of $\frac{1}{1,200,000}$, which exhibit the approaches to a large extent of coast, and enable the navigator to identify his position as he approaches from the open sea.

2. HARBOR CHARTS, on large scales, intended to meet the needs of local navigation, and frequently derived from scanty data.

In the present Catalogue the charts are arranged in regular geographical sequence, the reader being supposed to follow the shore westward and northward along the Pacific coast.

A list is also given of the sketches compiled from foreign sources for immediate use and published in 1869 as the U. S. Coast Survey Atlas of Harbor Charts of Alaska. Many of these have been superseded by better and larger reconnaissance charts or sketches in the regular series of Harbor Charts. Navigators will confer a favor by communicating to the Survey any new information by which the charts can be improved, since it will be many years before even a reconnaissance can be completed of the coasts and harbors of Alaska. In the list a separate number is given to each chart, even when there are several on one sheet, the names being repeated in each case, but only numbered once when in their proper geographical sequence.

In the Catalogue of charts published in 1883 the numbers of the Harbor Charts were changed and arranged in geographical sequence in accordance with a permanent scheme. These numbers are those here published, while the numbers which have appeared in previous catalogues are no longer in use. The sequence is intended to be as geographical as the nature of the case will admit.

TABLE OF SCALE EQUIVALENTS.

The following table gives the length of nautical and statute miles on the several scales named, these scales being the proportionate size of the chart to nature. That is, in the scale $\frac{1}{1,200}$, the chart is $\frac{1}{1,200}$ part of the actual linear dimensions in nature, (or 100 feet to the inch,) equal to 60.8 inches to a nautical mile, and 52.8 inches to a statute mile, and so on.

A nautical mile is a minute of an average great circle of the earth, and its length is 6,080 feet, or 1853.2 meters. A statute mile is 5,280 feet, or 1609.3 meters. One meter is 39.3704 inches and one centimeter is 0.3937 inches.

SCALE.	NAUTICAL MILE.		STATUTE MILE.	
	Inches.	Centimeters.	Inches.	Centimeters.
$\frac{1}{1,200}$	60.803	154.44	52.800	134.11
$\frac{1}{2,400}$	30.401	77.22	26.400	67.06
$\frac{1}{4,800}$	15.201	38.61	13.200	33.53
$\frac{1}{5,000}$	14.593	37.06	12.672	32.19
$\frac{1}{10,000}$	7.296	18.53	6.336	16.09
$\frac{1}{15,000}$	4.864	12.36	4.224	10.73
$\frac{1}{20,000}$	3.648	9.27	3.168	8.05
$\frac{1}{30,000}$	2.432	6.18	2.112	5.36
$\frac{1}{40,000}$	1.824	4.63	1.584	4.02
$\frac{1}{50,000}$	1.459	3.71	1.267	3.22
$\frac{1}{60,000}$	1.216	3.09	1.056	2.68
$\frac{1}{80,000}$	0.912	2.32	0.792	2.01
$\frac{1}{100,000}$	0.730	1.85	0.634	1.61
$\frac{1}{200,000}$	0.365	0.93	0.317	0.80
$\frac{1}{400,000}$	0.182	0.46	0.158	0.40
$\frac{1}{1,000,000}$	0.073	0.18	0.063	0.16
$\frac{1}{1,200,000}$	0.061	0.15	0.053	0.13

LIST OF CHARTS ISSUED BY THE UNITED STATES COAST AND GEODETIC SURVEY RELATING TO ALASKA AND ADJACENT REGION.

ABBREVIATIONS.—F., Finished; Pr., Preliminary; L., Photolithographic.

1883. Catalogue Number.	TITLE.	CLASS.	SCALE.	SIZE OF BORDER. Inches.	SIZE OF BORDER. Centimeters.	Date of last edition.	Date of first edition.	PRICE.
	SAILING CHARTS.							
	Northwest Coast of America.							
700	No. 1, Cape Flattery to Dixon Entrance	Pr.	1/1,200,000	25½ × 34	65 × 86	1880	1869	$0.50
701	No. 2, Dixon Entrance to Cape St. Elias	Pr.	1/1,200,000	25½ × 34	65 × 86	1880	1870	.50
702	No. 3, Icy Bay to Seven Islands	Pr.	1/1,200,000	25½ × 34	65 × 86	1880	1870	.50
703	[No. 4, Chirikoff Island to Nunivak.]*							
	HARBOR CHARTS.							
645	Cape Flattery and Neeah Harbors, Wash. Ter.	F.	1/40,000	14 × 17	36 × 43	1879	1853	.20
646	False Dungeness and New Dungeness, Wash. Ter.	Pr.	1/30,000 1/40,000	10 × 22	25 × 56	1882	1853 1856	.15
647	Port Townsend, Wash. Ter.	Pr.	1/40,000	11 × 14	28 × 36	1879	1858	.15
711	Fort Tongass, Lindenberg Harbor, I-you-keen Cove, Alaska	L.	1/132,000 1/16,000 1/16,000	9 × 11½	23 × 29	1869	1869	.10
712	Revillagigedo Channel and Ward Cove, Alaska	L.	1/5,000	18 × 22	46 × 56	1883	1883	.15
713	Tlevak and connecting Straits, Wrangell Strait, Alaska	L.	1/200,000 1/80,000	18½ × 22½	47 × 57	1883	1883	.15
721	Etolin Harbor, Kootsnoo Rapids, Alaska	L.	1/67,000 1/20,000	9 × 11½	23 × 29	1869	1869	.10
722	Tlevak and connecting Straits, Wrangell Strait, Alaska	L.	1/200,000 1/80,000	18½ × 22½	47 × 57	1883	1883	.15
723	Security Bay, Frederick Sound, Alaska	L.	1/16,000	12½ × 15	32 × 38	1883	1883	.15
724	Symonds Bay, Sitka Sound, Alaska	L.	1/7,200	14 × 14	36 × 36	1880	1880	.10
725	Sitka Harbor and Approaches, Alaska	L.	1/20,000	17 × 22½	43 × 57	1881	1869	.25
726	Whitewater Bay, Chatham Strait, Alaska	L.	1/16,000	15 × 16	38 × 40	1883	1883	.15

*Titles given in [BRACKETS] and underlined, indicate charts in preparation but not yet published.

1883. Catalogue Number.	TITLE.	CLASS.	SCALE.	SIZE OF BORDER. Inches.	SIZE OF BORDER. Centimeters.	Date of last edition.	Date of first edition.	PRICE.
	HARBOR CHARTS—Continued.							
731	Fort Tongass ..... / Lindenberg Harbor.. / I-you-keen Cove .... } Alaska	L.	1/132,000 / 1/16,000 / 1/16,000	9 × 11½	23 × 29	1869	1869	$0.10
732	Etolin Harbor..... / Kootsnoo Rapids ... } Alaska	L.	1/67,000 / 1/20,000	9 × 11½	23 × 29	1869	1869	.10
734	Wachusett Cove, Freshwater Bay.. / Fritz Cove, Douglas Island . .... / Juneau Harbor ..... } Alaska.....	L.	1/10,800 / 1/10,800 / 1/10,800	18½ × 23	47 × 59	1883	1883	.15
735	Fort Tongass ..... / Lindenberg Harbor.. / I-you-keen Cove .... } Alaska	L.	1/132,000 / 1/16,000 / 1/16,000	9 × 11½	23 × 29	1869	1869	.10
736	Wachusett Cove, Freshwater Bay.. / Fritz Cove, Douglas Island ..... / Juneau Harbor ..... } Alaska.....	L.	1/10,800 / 1/10,800 / 1/10,800	18½ × 23	47 × 59	1883	1883	.15
737								
741	Granite Cove, Port Althorp, and approaches, Alaska.	L.	1/3,000	14 × 18	36 × 46	1883	1883	.15
742	Lituya Bay and Entrance, Alaska.....	L.	1/120,000 / 1/15,000	8 × 12	20 × 30	1875	1875	.10
751	St. Elias Alpine Region, Alaska.....	L.	1/100,000	10 × 12	25 × 30	1875	1875	.10
752	Port Mulgrave and Entrance, Alaska.....	L.	1/80,000 / 1/8,000	10 × 13	25 × 33	1875	1875	.10
756	Middleton Island..... / N. W. Harbor, Shumagins ... / Sannakh Island ..... / Acherk Harbor ..... } Alaska	L.	1/130,000 / 1/84,000 / 1/490,000 / 1/91,000	10 × 13	25 × 33	1875	1875	.10
766	Kachekmak Bay, Cook's Inlet, Alaska.....	L.	1/123,000	18 × 20	45 × 51	1883	1883	.15
776	St. Paul Harbor, Kadiak Island, Alaska	L.	1/62,000	11½ × 14½	29 × 37	1881	1869	.10
786	Semidi Islands, Alaska.....	L.	1/400,000	9 × 13	23 × 33	1875	1875	.10
795	[Trinity Islands to Coal Cape].....							

1883. Catalogue Number.	TITLE.	Class.	Scale.	Size of Border. Inches.	Size of Border. Centimeters.	Date of last edition.	Date of first edition.	Price.
	HARBOR CHARTS—Continued.							
796	S. W. Anchorage, Chirikoff Island, Alaska	L.	1/43,000	10 × 11	25 × 28	1875	1875	$0.10
797	Chignik Bay, Aliaska Peninsula, Alaska	L.	1/23,000	10 × 13½	25 × 34	1875	1875	.10
798	Chiachi Islands, Alaska	L.	1/17,000	9½ × 13½	24 × 34	1875	1875	.10
806	Part of Aliaska Peninsula and adjacent islands from Coal Cape to Issannakh Strait, Alaska	L.	1/596,000	15 × 18	38 × 46	1882	1882	.15
807	Shumagin Islands, Alaska	L.	1/447,000	10½ × 12	27 × 30	1875	1872	.10
808	Simeonoff Harbor, Shumagins	L.	1/90,000	10 × 12	25 × 30	1875	1875	.10
809	Northeast Harbor, Shumagins	L.	1/122,000	10 × 12	25 × 30	1875	1875	.10
	Falmouth Harbor, Shumagins	L.	1/65,000	10 × 12	25 × 30	1875	1875	.10
	Eagle Harbor, Shumagins	L.	1/90,000	10 × 12	25 × 30	1875	1875	.10
	Middleton Island	L.	1/130,000	10 × 13	25 × 33	1875	1875	.10
810	Northwest Harbor, Shumagins	L.	1/64,000	10 × 13	25 × 33	1875	1875	.10
	Sannakh Island	L.	1/490,000	10 × 13	25 × 33	1875	1875	.10
	Acherk Harbor	L.	1/31,000	10 × 13	25 × 33	1875	1875	.10
	Simeonoff Harbor, Shumagins	L.	1/90,000	10 × 12	25 × 30	1875	1875	.10
	Northeast Harbor, Shumagins	L.	1/122,000	10 × 12	25 × 30	1875	1875	.10
811	Falmouth Harbor, Shumagins	L.	1/65,000	10 × 12	25 × 30	1875	1875	.10
812	Eagle Harbor, Shumagins	L.	1/90,000	10 × 12	25 × 30	1875	1875	.10
813	Sanborn Harbor, Shumagins, Alaska	L.	1/40,000	9 × 11	23 × 28	1872	1872	.10
814	Popoff Strait and Humboldt Harbor, Shumagin Islands, Alaska	L.	1/40,000	9 × 11	23 × 28	1872	1872	.10
815	Coal Harbor, Unga Island, Alaska	L.	1/100,000	9 × 11	23 × 28	1872	1872	.10
			1/20,000					
	Middleton Island	L.	1/130,000	10 × 13	25 × 33	1875	1875	.10
	Northwest Harbor, Shumagins	L.	1/64,000	10 × 13	25 × 33	1875	1875	.10
816	Sannakh Island	L.	1/490,000	10 × 13	25 × 33	1875	1875	.10
817	Acherk Harbor, Sannakh Island	L.	1/31,000	10 × 13	25 × 33	1875	1875	.10
821	Captain's Bay, Unalashka, Aleutian Islands	L.	1/53,000	13 × 17½	33 × 44	1875	1869	.10
822	Iliuliuk Harbor, Unalashka, Aleutian Islands	L.	1/9,400	9 × 14	23 × 36	1875	1875	.10

1883. Catalogue Number.	TITLE.	CLASS.	SCALE.	SIZE OF BORDER. Inches.	SIZE OF BORDER. Centimeters.	Date of last edition.	Date of first edition.	PRICE.
	HARBOR CHARTS.—Continued.							
841 851	Bay of Islands, Adakh Island Constantine Harbor, Amchitka Island } Aleutian I'ds.	L.	1/33,000 1/43,000	8½ × 12	22 × 30	1875	1875	$0.10
852	Kyska Harbor, Kyska Island, Aleutian Islands	L.	1/27,000	8½ × 13	22 × 33	1875	1875	.10
871	Port Möller, Aliaska Peninsula, Bering Sea, Alaska	L.	1/133,000	10 × 14	25 × 36	1875	1875	.10
886	Pribiloff Islands, Bering Sea, Alaska	L.	1/666,000	9 × 13	23 × 33	1875	1875	.10
887	St. George Island, Bering Sea, Alaska	L.	1/100,000	8 × 12	20 × 30	1875	1875	.10
888	St. Paul Island, Bering Sea, Alaska	L.	1/125,000	10 × 12	25 × 30	1875	1875	.10
891	St. Mathew Island, Bering Sea, Alaska	L.	1/160,000	10 × 13½	25 × 34	1875	1875	.10
896	Cape Etolin, Nunivak Island, Bering Sea, Alaska	L.	1/20,000	10 × 12½	25 × 32	1875	1875	.10
960	Alaska and adjoining territory, (chromo-lithographic map)	.....	1/3,000,000	28 × 36	70 × 90	1884	1869	.50

U. S. COAST SURVEY [ATLAS OF CHARTS OF] HARBORS IN ALASKA, 1869.

Sheet No. 1.—Kaigani Harbor.
Tamgas Harbor.
Bucareli Bay.
Port Bazan.
Port Stewart.
Port Conclusion.

No. 2.—Sitka Harbor.

No. 3.—Port Protection.
Highfield Anchorage.
Whale Bay.
Cross Harbor.
Salisbury Sound.
Entrance to Cross Sound.
Port Spasskia.

No. 4.—Lituya Bay.
Port Mulgrave.
Port Etches.
Port Chalmers.
Port Chatham.
Entrance to Kaknu River.
Kukak Bay.

No. 5.—St. Paul Harbor, Kadiak Island.

U. S. COAST SURVEY: ATLAS—Continued.

No. 6.—Port Graham.
Port Wrangell.
Delaroff and Coal Harbors, Unga Island.
Kiluluk and Chernoffski Bays, Unalashka Island.

No. 7.—Iliuliuk and Captains Harbors, Unalashka Island.

No. 8.—Sviechnikoff Bay, Amlia Island.
Nazan and Korovinski Bays, Atka Island.
Bay of Waterfalls, Adakh Island.
Constantine and Kiriloff Harbors, Amchitka Island.
Chichagoff Harbor, Attu Island.

No. 9.—Plover Bay, Eastern Siberia.

LIST OF CHARTS ISSUED BY THE U. S. HYDROGRAPHIC OFFICE.

(North to latitude 60° and west to longitude 140° W. Gr.)

No.	Title.	Date.
25	Juan de Fuca Strait	1873
225	SE. Coast of Alaska, Alexander Archipelago	1869
	With subsketches: Bay of Etholine	1869
	Freshwater Bay	1869
	Plan of Kootznahoo Roads and Koteosok Harbor	1869
	Pyramid Island Harbor	1869
	Security Bay	1869
	Takou Harbor	1869
	Plan of Wrangell Straits	1869
225	Same, with additions on the N. part of the archipelago	1880
259	Metlakatla Bay	1870
882	Contains: Kootznahoo Roads and Koteosok Harbor	1881
	Pogibshi Channel or Peril Strait	1881
	Portage Bay, Chilkoot Inlet	1881
	Swanson Bay	1881
	Whitestone Narrows	1881
	Willoughby Cove	1881
	William Henry Harbor	1881
883	Lynn Canal, Chilkat River and Chilkoot Inlet	1881
	With subsketches: Fritz Cove, Stephens Passage	1881
	Hooniah Harbor, Cross Sound	1881
	Schulze Cove, Fish Bay	1881
904	Queen Charlotte Islands, Hecate Strait and Dixon Entrance	1881

LIST OF CHARTS ISSUED BY THE BRITISH ADMIRALTY.

(North to and including the Alexander Archipelago.)

No.	Title.	Date.
48	Skidegate Inlet, Queen Charlotte Islands	1872
	With subsketch: Anchor Cove	1872
364	Duncan Bay and Metlah-Catlah Bay	1880
538	Seymour Narrows, Discovery Passage	1867
555	Goletas Channel, etc	1881
569	Esperanza to Clayuquot, including Nootka Sound	1871
	With subsketch: Hesquiat Harbour	1871
570	Quatsino Sound	1862
	With subsketches: Hecate Cove	1862
	Kropino Harbour	1862
571	Contains: Blunder Harbor, Queen Charlotte Sound	1863
	Cullen " " " "	1863
	Cypress " " " "	1863
	Tracy " " " "	1863

No.	Title.	Date.
	British Admiralty Charts—Continued.	
572	Constance Cove	1882
573	Nanaimo Harbour, etc	1881
576	Esquimalt and Victoria Harbours	1882
577	Juan de Fuca Strait	1881
579	Georgia, Strait of, Sheet 1	1881
	With subsketches: Buccaneer Bay	1865
	Tucker Bay, Lasqueti Island	1865
580	Georgia, Strait of, Sheet 2	1880
	With subsketches: Beaver Creek, Loughborough Inlet	1880
	Cameleon Harbour, Nodales Channel	1880
	Drew Harbour, Valdes Island	1880
	Gorge Harbour, Cortes Island	1880
	Menzies Bay, Discovery Passage	1880
	Otter Cove, Discovery Passage	1880
	Prideaux Harbour, Desolation Sound	1880
	Squirrel Cove, Cortes Island	1880
	Tribune Bay, Hornby Island	1880
	Waddington Harbour, etc	1880
	Walsh Cove, Vancouver Island	1880
581	Johnstone and Broughton Straits	1872
	With subsketch: Suquash Anchorage	1869
582	Goletas Channel to Quatsino Sound	1881
583	Quatsino to Esperanza, including Kyuquot Sound	1880
584	Sydney Inlet to Natinat, including Clayoquot and Barclay Sounds	1874
	With subsketches: Entrance Anchorage	1874
	Island Harbour	1874
	Refuge Cove	1874
	Uchucklesit	1874
585	Contains: Augusta, Port, Vancouver Island	1880
	Graves, Port, Gambier Island	1880
	Nanoose Harbour	1880
	Pender Harbour, Strait of Georgia	1880
	Shoal Channel and Plumper Cove	1880
589	Esperanza and Nuchatlitz Inlets	1862
	With subsketch: Queen's Cove	1862
590	Klaskino and Klaskish Inlets, etc	1862
592	Barclay Sound, Vancouver Island	1874
602	Roche Harbour, Haro Strait	1869
611	Griffin Bay, Haro Archipelago	1881
630	Port Neville	1860
	With subsketch: Forward Harbour	1860
634	Harvey, Port, Johnstone Strait	1860
714	Contains: Maple Bay	1881
	Osborn Bay	1881
	Oyster and Telegraph Harbours	1881
	Stuart Channel	1881
	Trincomalie Channel	1881
716	Nasparti and Ou-ou-kinsh Inlets	1863
717	Kyuquot Sound, Vancouver Island	1880
1462	Contains: Belakula Anchorage, Burke Channel	1872
	Blakeney, Port, etc	1872
	Klemtoo Passage and Anchorage	1872
	Morris Bay	1872
	Nowish Cove, Finlayson Channel	1872
	Welcome Harbour, Fitzhugh Sound	1872
1897 *a*	Esquimalt Harbour, Vancouver Island	1880
1897 *b*	Victoria Harbour, etc	1882

No.	Title.	Date.
	British Admiralty Charts—Continued.	
1901	Ogden Channel and adjacent passages	1879
	With subsketches: Alpha Bay, Finlayson Channel	1879
	Carter Bay	1879
	Goldstream Harbour	1879
	Holmes Bay, Princess Royal Island	1879
	Kynumpt Harbour, Seaforth Channel	1879
	McLaughlin Bay	1879
	Namu Harbour	1879
	Safety Cove	1879
	Schooner Retreat	1879
	Stuart Anchorage	1879
1906	Becher and Pedder Bays	1872
1907	Sooke Inlet, Vancouver Island	1864
1910	Port San Juan, Duncan Rock and Neeah Bay	1864
1911	Strait of Juan de Fuca, with Admiralty Inlet and Puget Sound	1881
1916	Nootka Sound, etc	1879
1916	Nootka Sound, etc	1866
	With subsketch: Plan of Friendly Cove	1866
1917	Vancouver Island and adjacent shores of British Columbia	1879
1922	Fraser River and Burrard Inlet, (Georgia Gulf)	1881
1923 A	Cape Caution to Port Simpson, (North half)	1881
1923 B	Cape Caution to Port Simpson, (South half.)	1879
2067	Contains: Alert Bay, Vancouver Island	1867
	Beaver Harbour, Vancouver Island	1867
	Bull Harbour, Goletas Channel	1867
	Gowlland Harbour and Quathiaski Cove	1867
	Nimpkish River, Entrance to	1867
	Shucartie Bay, Vancouver Island	1867
2153	Beaver Harbour, Vancouver Island	1852
2168	Plans of Ports, etc., in Queen Charlotte Islands	1881
	Contains: Cumshewas Harbour	1881
	Douglas Harbour	1881
	Houston Stewart Channel	1881
	Kuper Port	1881
	Masset Harbour	1881
	Mitchell Harbour	1881
	Parry Passage	1881
	Rose Harbour	1881
	Skincuttle Inlet	1881
	Virago Sound	1881
2189	Contains: Port Canaveral, Principe Channel	1881
	Coghlan Anchorage, Grenville Island	1881
	Klewnuggit Inlet, Grenville Channel	1881
	Lowe Inlet, Grenville Channel	1881
	Stephens, Port, Principe Island	1881
2190	Nass Bay, etc	1872
	With subsketch: Nass River, etc	1872
2337	Sitka Sound, etc	1880
2348	With subsketch: Symonds Bay	1880
	Sitka Harbour and approaches	1882
2426	Port Simpson and adjacent anchorages	1872
2430	Vancouver Island to Cordova Bay	1881
2431	Cordova Bay to Cross Sound	1865
2431	Port Simpson to Cross Sound	1882
	With subsketch: Anchorage off Point Highfield	1882
2448	Fitzhugh and Smith Sounds	1878
	With subsketch: Takush Harbour	1878

No.	Title.	Date.
	British Admiralty Charts—Continued.	
2449	Lama Passage and Seaforth Channel	1872
2453	Brown and Edye Passages	1879
	With subsketches: Qlawdzeet Anchorage, etc	1879
	Refuge Bay	1879
2512	Nanaimo Harbor and Departure Bay	1881
2627	Vancouver Island, Semiahmoo Bay and Drayton Harbour	1857
2689	Haro and Rosario Straits	1874
2840	Haro Strait and Middle Channel	1882

LIST OF CHARTS ISSUED BY THE RUSSIAN HYDROGRAPHIC DEPARTMENT.

(North to and including the Alexander Archipelago.)

No.	Series.	Title.	Date.
1378	P. O. S. 9.	Pacific Ocean between Baranoff Island and Kadiak	1847
		With subsketches: Shelikoff Bay, etc	1847
		Rurik Harbor	1847
1396	P. O. S. 10.	Pacific Ocean on the NW. Coast of America	1848
		With subsketches: Etolin Harbor	1848
		Kaigahnee Harbors	1848
		Tamgas Harbor	1848
		Woewodski Harbor, etc	1848
1397		Chart of entrance to Sitka Sound, New Archangel, etc	1848
1441	P. O. S. 10 b.	Chart of Wrangell Strait	1850
1493	No. 10 sh. d.	Alexander Archipelago. South half	1853
1494	No. 10 sh. c.	Alexander Archipelago. North half	1853

LIST OF CHARTS ISSUED BY TEBIENKOFF.

(North to and including the Alexander Archipelago.)

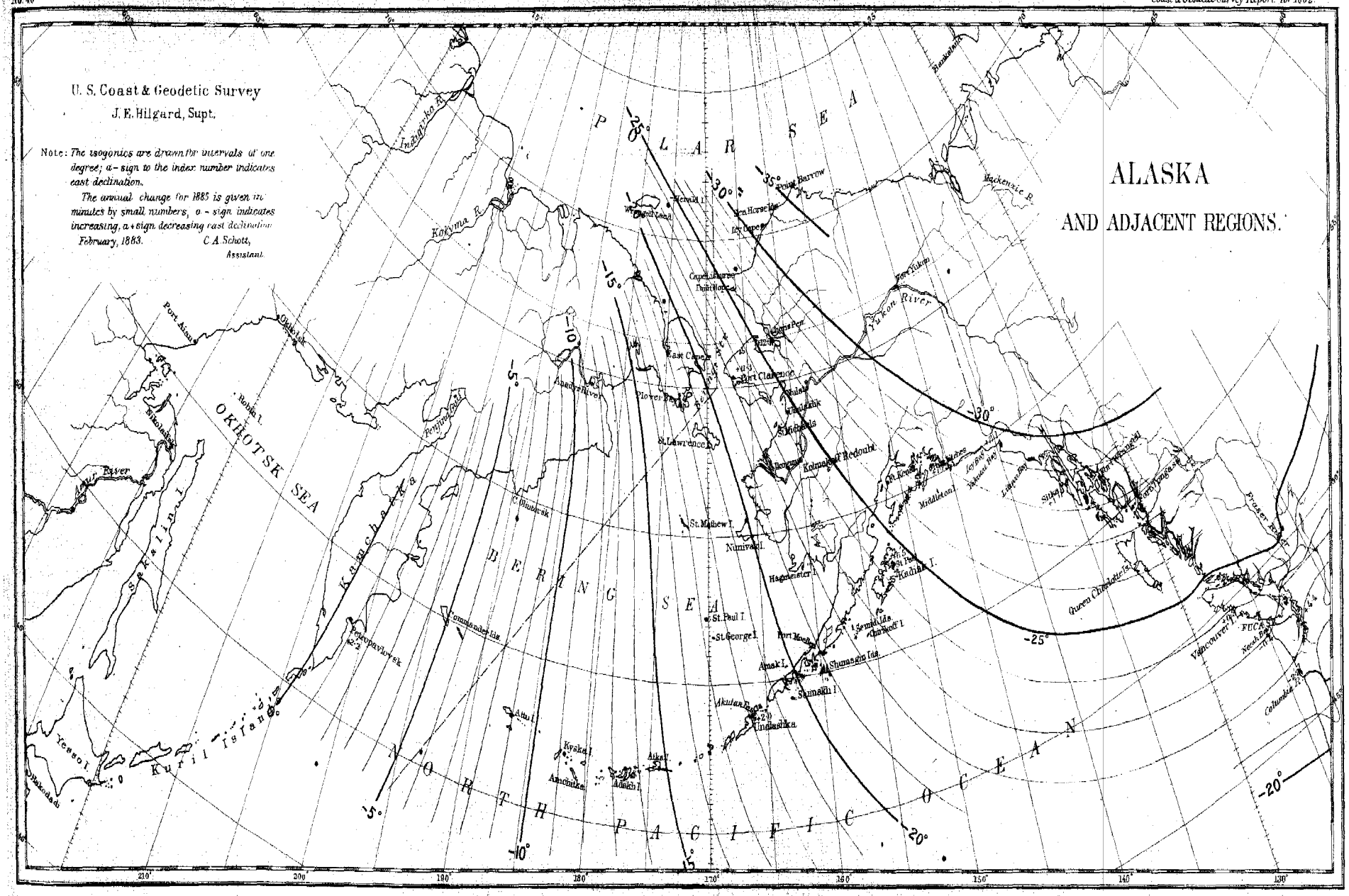
No.	Title.	Date.
VII	NW. Coast of America near Yakutat Bay	1849
	With subsketches: Lituya Bay	1849
	Anchorage, Yakutat Bay	1849
	Passage to Olga Strait	1849
VIII	Inlets on the NW. Coast of America: North part	1849
	With subsketches: Entrance to Cross Sound and Icy Strait	1849
	Anchorage in Whale Bay	1849
	Cross Harbor	1849
IX	Inlets on the NW. Coast of America: Middle part	1849
	With subsketches: Bazan Harbor	1849
	Entrance, etc., to the Port of Bucareli	1849
	Port Conclusion	1849
	Kaigahnee, etc	1849
X	Inlets on the NW. Coast of America: South part	1849
XXXVIII	Chart of Sitka Bay	1850
	With subsketch: Entrance to inner harbor of Sitka	1850

LIST OF CHARTS ISSUED BY OTHER AUTHORITIES.

(North to and including the Alexander Archipelago.)

No.	Title.	Date.
	OLD RUSSIAN SERIES.	
XVIII	Ilina Bay	
XXI	Plan of Nutka (subsketch)	
	FRENCH ADMIRALTY.	
1979	NW. Coast of America, etc	1862
	SPANISH ADMIRALTY.	
470	Cape Fairweather to Lake Nicaragua	1863

ISOGONIC CHART FOR 1885.0



LIST OF

ASTRONOMICAL POSITIONS AND VARIATION OF THE COMPASS

FOR THE

COAST PILOT OF ALASKA

PART I.

TABLE OF

GEOGRAPHICAL POSITIONS IN ALASKA AND ADJACENT REGION,

ALPHABETICALLY ARRANGED.

The following table contains the geographical positions cited in the preceding text and the magnetic variation and dip at the same localities; together with similar elements for all other localities in Alaska which have been determined with precision by the U. S. Coast and Geodetic Survey, the U. S. Revenue Marine, the U. S. Navy, etc., during the twelve years ending with 1882, and a few others of importance.

The latitudes are all *north*, the longitudes all *west* from Greenwich; the declinations all to the *eastward* of true north.

An asterisk denotes that the observations are referred to a particular astronomical station at the general locality mentioned.

Those positions which are supposed to be merely approximately determined are marked with a dagger.

Those positions determined by officers of the U. S. Coast Survey are referred to the U. S. C. S.; those by officers of the U. S. Navy to the U. S. N., etc.

The page-number refers to the page in the preceding text on which the locality is referred to.

British Admiralty Charts are referred to by number, as "B. A., 2431," etc. Russian Hydrographic Charts as "R. H.," etc.

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Adakh Island, Bay of Islands *	------	51	49	18	176	51	58
Adams, Fort, Tozikakat, Yukon River†	------	63	08	11	152	30	11
Adolphus Point, SE. Alaska †	191	58	18	00	135	41	00
Alexander Point, Wrangell Strait †	107	56	34	30	132	52	00
Alexander Point, Wrangell Strait †	107	56	28	46	132	58	36
Alice Arm, Head of †	60	55	26	00	129	24	00
Alice Arm, Head of †	60	55	29	00	129	20	00
Alpha Bay, North Point †	37	53	52	01	130	17	34
Althorp, Port. *See* Granite Cove.							
Amchitka Island, Constantine Harbor *	------	51	23	39	180	47	55
Anvik Village, Yukon River	------	62	37	24	160	07	11
Atka Island, Nazan Bay *	------	52	10	30	174	15	18
Attu Island, Chichagoff Harbor *	------	52	56	01	186	47	36
Augusta Point, Chatham Strait †	181	58	04	00	135	04	00
Bailey Harbor, Aliaska Peninsula *	------	55	08	48	162	07	22
Baker Point †	102	52	20	05	136	31	05
Banks, Port, Anchorage †	133	56	39	00	135	00	00
Barrow Point, N. extreme of Alaska †	------	71	20	00	156	14	45
Bartolomé Cape †	96	55	12	05	----------		
Bay of Islands. *See* Adakh Island.							
Bazan, Port, Anchorage †	94	54	50	05	132	47	02
Beaver Cove, Lewis Point, B. C.	9	50	32	47	126	52	12
Beaver Harbor, B. C., Shell Islet *	12	50	42	36	127	25	07
Belcher Point, Arctic Coast †	------	(70	48	00)	159	40	22
Belkoffski Village, Aliaska Peninsula *	------	55	05	13	162	00	15
Bering Island, village †	------	55	14	00	194	08	00
Big Bay, British Col., South Island *	42	54	29	06	130	28	24
Bingham Point, Yakobi Island †	185	58	02	00	136	34	00
Blakeney, Port, B. C.*	28	52	18	47	128	22	42
Boca de Quadra, entrance †	71	55	04	30	131	00	00
Bogosloff, Volcano Island †	------	53	58	36	168	00	00
Boundary line, Bering Strait	------	64	45	00	168	58	05
Broad Cape, Kadiak Island †	------	57	34	36	152	05	00
Brumez Point †	70	54	54	30	130	49	00
Bull Harbor, B. C.*	16	50	54	47	127	56	03
Caamano Cape, Clarence Strait †	75	55	29	00	131	54	00
Caamano Cape, Clarence Strait †	75	----------			131	58	00

Date.	Authority.	Decl. E.	Dip.	Date.	Authority.
		° ′	° ′		
1873	U. S. C. S.	13 52		1873	U. S. C. S.
1869	U. S. A.				
1882	B. A., 2431				
1881	U. S. N.				
1793	Vancouver				
1868	Pender				
1879	B. A., 1901	27 25		1868	B. A., 1901.
1873	U. S. C. S.	7 17		1873	U. S. C. S.
1869	U. S. A.				
1873	U. S. C. S.	16 57		1873	U. S. C. S.
1873	U. S. C. S.	7 43	65 11	1873	U. S. C. S.
1879	U. S. R. M.	21 08		1879	U. S. R. M.
	Various authorities	26 30		1793	Vancouver.
1847	R. H. 1494	27 45		1847	R. H., 1494.
1881	U. S. R. M.	37 18	81 18	1881	U. S. R. M.
1793	Vancouver				
1834	Zarembo	26 00		1834	Zarembo.
1867	B. A., 2067				
1862	Vancouver Id. Pilot	24 10		1862	Vancouver Id. Pilot.
1880	U. S. C. S.		80 53	1880	U. S. C. S.
1880	U. S. C. S.	21 21	69 16	1880	U. S. C. S.
1879	Nordenskiöld	3 56	66 34	1879	Nordenskiöld.
1872	B. A., 2426				
1880	U. S. C. S.				
1872	B. A., 1462				
1881	U. S. C. S.				
1880	U. S. C. S.				
1880	U. S. C. S.				
1869	U. S. C. S.				
1793	Vancouver				
1867	B. A., 2067	24 20		1862	B. A., 2067.
1848	R. H., 1493				
1882	U. S. C. S.				

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Calvert Cape, Fitzhugh Sound *	21	51	24	40	127	55	53
Carter Bay, B. C.*	32	52	49	41	128	24	34
Caution Cape, B. C.†	19	51	09	36	127	48	12
Chamisso Island *		66	13	21	161	48	45
Chamisso Island; beacon center of island		66	13	17	161	50	14
Chasina Point, Clarence Strait †	85	55	17	00	131	55	00
Chernoffski Village, Unalashka *		53	23	57	167	29	56
Chiachi Island *		55	51	58	159	05	26
Chichagoff Harbor. *See* Attu.							
Chignik Bay,* Aliaska Peninsula		56	19	20	158	24	25
Chirikoff Island *		55	48	22	155	42	51
Clarence, Port, Point Spencer †		65	17	00	166	50	54
Clarence Port *		65	16	07	166	50	54
Cloak Bay, Q. C. Islands, entrance †	53	54	12	00	132	58	00
Coal Harbor, Unga Island *		55	20	45	160	38	39
Coal Point, Kachekmak Bay *		59	36	08	151	23	37
Coghlan Anchorage, B. C.*	34	53	22	44	129	16	15
Conclusion, Port* †	120	56	14	55	134	22	30
Constantine Harbor. *See* Amchitka.							
Cook, Mount †	212	60	15	00	140	00	00
Coronation Island †	100	55	53	30	134	10	00
Couverden Point †	193	58	13	00	135	08	00
Craven Point, Peril Strait †	166	57	29	30	134	57	00
Crillon, Mount †	202	58	40	00	137	02	07
Danger Point, Kootznahoo †	176	57	29	00	134	37	00
Dangerous Cape. *See* Graham Port.							
December Point, Wrangell Strait †	113	56	32	31	132	57	06
Decision Cape †	100	56	02	00			
Devil Rock, East; Dixon Entrance †	56	54	40	45	131	08	15
Diomede Island, Big; Bering Strait *		65	44	51	169	04	25
Disenchantment Bay, Yakutat *	210	59	51	10	139	48	05
Disenchantment Bay, Yakutat *	210	59	59	30			
Dolgoi Cape,* Dolgoi Island		55	03	21	161	43	19
Dundas Point †	188	58	21	00	136	18	00
Edward Cape †		57	39	00	136	15	00
Eleanor Cove, south head †	210	59	44	00	(139	32	00)
Ellis Point, Tebienkoff Bay †	120	56	31	00	134	14	00

Date.	Authority.	Decl. E.	Dip.	Date.	Authority.
		° ′	° ′		
1872	B. A., 2448				
1879	B. A., 1901	26 20		1868	B. A., 1901.
1872	B. A., 2448				
1880	U. S. C. S.	26 45	77 17	1880	U. S. C. S.
1880	U. S. C. S.				
1793	Vancouver				
1880	U. S. C. S.	16 14	67 14	1880	U. S. C. S.
1874	U. S. C. S.	21 56		1874	U. S. C. S.
1874	U. S. C. S.	22 02		1874	U. S. C. S.
1874	U. S. C. S.	23 01		1874	U. S. C. S.
1880	U. S. C. S.				
1880	U. S. C. S.	22 45	76 04	1880	U. S. C. S.
1880	Dawson				
1872	U. S. C. S.				
1880	U. S. C. S.	25 50	74 00	1880	U. S. C. S.
1872	B. A., 2189				
1792	Vancouver	29 00		1792	Vancouver.
1874	U. S. C. S.				
1848	R. H., 1493				
1881	U. S. N.				
1881	U. S. N.				
1874	U. S. C. S.				
1868	U. S. N.	29 00		1868	U. S. N.
1881	U. S. N.				
1793	Vancouver				
1879	Brundige				
1880	U. S. C. S.	21 48	76 15	1880	U. S. C. S.
1791	Malaspina	30 16		1791	Malaspina.
1802	Galiano				
1880	U. S. C. S.	17 59		1880	U. S. C. S.
-------	Various authorities				
-------	Various authorities				
1794	Puget				
1793	Vancouver				

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Essington, Port, B. C.†	38	54	09	00	129	57	00
Etches, Port, Prince William Sound *	------	60	20	43	146	37	38
Etolin Cape, Nunivak Island *	------	60	25	22	166	08	28
Fairweather Cape †	204	58	50	00	137	55	00
Fairweather, Mount	205	58	54	24	137	30	59
Foggy, *see* Brumez Point.							
Forrester Island, SE. end †	95	54	48	00	133	30	00
Fox Cape, Dixon Entrance †	62	54	45	30			
Fox Cape, Dixon Entrance †	62	54	46	30	130	50	00
Fox Cape, Dixon Entrance †	62	54	45	25	130	43	18
Freshwater Bay, Pavloff Harbor †	180	57	50	00	135	04	00
Frigate Bay, Center Islet *	21	51	28	10	127	44	38
Fritz Cove, Douglass Island †	173	58	19	00	134	47	00
Gardner Harbor, Clarence Strait †	84	54	50	00	131	45	00
Gardner, Point †	131	57	01	00	134	28	00
Georgiana, Cape †	158	57	18	00	135	45	00
Goldstream Harbor, B. C.*	22	51	43	19	128	00	34
Gowlland Harbor, B. C.*	3	50	05	02	125	16	06
Graham, Port, Dangerous Cape *	------	59	23	53	151	53	00
Granite Cove, Port Althorp *	187	58	11	32	136	23	30
Grenville Cape, Kadiak †	------	56	36	47	152	07	00
Hagemeister Island, Bering Sea *	------	58	48	31	160	50	03
Hamilton Harbor †	118	56	52	48	133	36	00
Harris Point, Kuiu Island †	119	54	17	42	134	14	00
Hassler Harbor, Revillagigedo Channel *	78	55	13	01	131	26	39
Hastings Arm, Head of, B. C.	60	55	32	00	129	44	00
Hastings Arm, Head of, B. C	60	55	39	00	129	48	00
Highfield, Anchorage at Point	91	56	29	16	132	22	40
Holmes Bay,* B. C	33	53	16	25	129	05	19
Hood Point †	114	56	44	00			
Howkan Village,* Kaigahnee Strait	67	54	49	30	132	50	12
Humboldt Harbor. *See* Popoff Strait.							
Icy Cape, Arctic Coast †	------	70	20	00	161	56	00
Icy Cape,* Station near	------	70	13	10	162	15	12
Ilina Bay, Anchorage †	182	54	47	06	136	16	00
Invisible Point, Dixon Entrance †	------	54	10	30	131	37	30
Islands, Bay of. *See* Adakh.							

DATE.	AUTHORITY.	DECL. E.	DIP.	DATE.	AUTHORITY.
		° ′	° ′		
1881	Geol. Survey of Canada				
1874	U. S. C. S	29 10		1874	U. S. C. S.
1874	U. S. C. S	21 34		1874	U. S. C. S.
1874	U. S. C. S				
1874	U. S. C. S				
	Various authorities				
1793	Vancouver				
1868	Pender				
1883	U. S. C. S				
1869	U. S. N				
1879	B. A., 1901	25 00		1868	B. A., 1901.
1881	U. S. N	30 00		1881	U. S. N.
1848	R. H., 1396				
1793	Vancouver				
1833	Vasilieff	30 00		1833	Vasilieff.
1879	B. A., 1901	25 15		1866	B. A., 1901.
1867	B. A., 2067	23 35		1866	B. A., 2067.
1880	U. S. C. S	24 33		1880	U. S. C. S.
1880	U. S. C. S	32 14	75 22	1880	U. S. C. S.
1869	U. S. C. S				
1874	U. S. C. S	22 53		1874	U. S. C. S.
1868	U. S. N				
1848	R. H., 1494				
1882	U. S. C. S				
1793	Vancouver				
1868	Pender				
1869	U. S. C. S				
1879	B. A., 1901	26 40		1868	B. A., 1901.
1793	Vancouver				
1881	U. S. N	27 03	74 21	1881	Nichols.
1880	U. S. C. S				
1880	U. S. C. S	30 03	80 08	1880	U. S. C. S.
1809	Ilin				
1880	Dawson				

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Iyoukeen Cove †	181	57	54	00	134	58	00
Juneau Harbor †	171	58	16	00	134	20	00
Kadiak, Chagafka Cove, St. Paul Harbor *	------	57	47	57	152	21	21
Kaigahnee Harbor, Prisoner's Cove *	66	56	46	00	132	45	30
Kasa-an Bay, Anchorage †	86	55	30	30	132	27	00
Klemtoo Passage, Observation Islet *	30	52	34	22	128	32	09
Knox Cape, Queen Charlotte Islands	51	54	15	00	133	03	00
Knox Cape, Queen Charlotte Islands	51	54	10	48	132	58	00
Kodiak. *See* Kadiak.							
Kohklux, Chilkat River *	198	59	23	41	135	53	30
Kresta Bay, Guide Islet †	154	57	08	00	135	28	00
Krusenstern Cape, Kotzebue Sound †	------	(67	08	00)	163	50	18
Kynumpt Harbor, Berry Point *	26	52	12	20	128	11	37
Kyska Harbor, Aleutian Islands *	------	51	59	04	182	30	00
La Perouse, Mount †	201	58	34	00	137	00	00
Lauder Point †	133	56	36	00	135	05	00
Lighthouse Rocks	------	55	45	23	157	27	04
Lindenberg Harbor, East Point	------	59	29	00	135	02	00
Lisburne Cape, Arctic Coast *	------	68	52	52	166	05	31
Lisburne end of the cape itself †	------	68	53	00	166	10	00
Lituya Bay *	202	58	36	57	137	40	05
Marsden, Point, Chatham Strait	182	(58	05	00)	134	48	45
Mary Island Anchorage †	76	55	06	16	131	10	30
Mary, Port †	158	57	07	00	135	40	00
Maskelyne Point, Portland Inlet †	57	54	42	30	----------		
Maskelyne Point, Portland Inlet †	57	54	38	42	130	27	00
McLaughlin Bay, B. C. *	25	52	08	37	128	10	18
Metlakatla Bay, B. C. *	41	54	20	10	130	27	30
Middleton Island *	213	59	27	22	146	18	45
Mitchell Point †	105	56	29	00	----------		
Moira Sound †	85	55	02	00	131	55	00
Möller, Port, Aliaska Peninsula *	------	55	54	59	160	34	55
Morris Bay *	28	52	21	00	128	28	30
Mosman Island, B. C	20	51	24	30	127	55	53
Mudge Cape, Discovery Passage, B. C.	1	50	00	00	125	12	30
Mulgrave Port, Yakutat *	208	59	33	42	139	45	53
Muzon Cape, Dixon Entrance †	65	54	42	15	132	40	30

Date.	Authority.	Decl. E.	Dip.	Date.	Authority.
		° ′	° ′		
1869	U. S. C. S	29 30		1869	U. S. C. S.
1881	U. S. N	30 00		1881	U. S. N.
1867	U. S. C. S	25 07	72 35	1880	U. S. C. S.
1849	Etolin	26 00		1833	Etolin.
1880	U. S. C. S	27 50		1880	U. S. C. S.
1872	B. A., 1462				
	B. A., 2168				
1880	Dawson				
1869	U. S. C. S		75 44	1869	U. S. C. S.
1849	Tebienkoff				
1880	U. S. C. S				
1879	B. A., 1901				
1873	U. S. C. S	11 06	65 01	1873	U. S. C. S.
1874	U. S. C. S				
	Various authorities				
1874	U. S. C. S				
1869	U. S. C. S	29 15		1869	U. S. C. S.
1880	U. S. C. S	25 45	78 53	1880	U. S. C. S.
1880	U. S. C. S				
1874	U. S. C. S	30 03		1874	U. S. C. S.
1880	U. S. C. S		76 02	1880	U. S. C. S.
1882	U. S. C. S	28 16		1882	U. S. C. S.
1810	Rikord	30 56		1810	Rikord & Khliebnikoff.
1793	Vancouver				
1874	B. A., 1923 A				
1879	B. A., 1901	26 43		1881	U. S. C. S.
1880	B. A., 364	27 40		1865	B. A., 364
1874	U. S. C. S				
1793	Vancouver				
	Vancouver				
1874	U. S. C. S	21 22		1874	U. S. C. S.
1872	B. A., 1462	25 20		1872	B. A., 1462.
1872	B. A., 2448				
1880	B. A., 580				
1874	U. S. C. S	29 56	76 18	1880	U. S. C. S.
1879	Brundige				

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Muzon Cape, Dixon Entrance †	65	54	41	24	132	44	42
Naas Bay, Kincolith Mission *	58	54	59	26	129	57	36
Naas River, near village *	59	55	03	54	129	31	54
Nabannah Bay, B. C.*	35	53	39	24	129	44	51
Nakat Inlet * †	62	54	48	56	130	35	00
Nazan Bay. *See* Atka Island.							
Nelson Point	72	55	15	00			
Nettle Basin, B. C.*	35	53	32	30	129	35	48
New Eddystone Rock, Behm Canal	72	55	29	00	130	45	00
Nimpkish River, Green Islet, B. C.*	10	50	34	12	126	58	37
Northeast Harbor, Little Koniushi Island *		54	58	25	159	22	18
North Point, Dixon Entrance	52	54	15	00	132	56	30
North Point, Dixon Entrance	52	54	15	00	133	08	30
Northwest Harbor, Little Koniushi Island *		55	03	17	159	23	32
Nowish Cove, B. C.*	30	52	31	25	128	27	15
Nuchek. *See* Etches, Port.							
Nulato, Yukon River		64	40	23	(158	13	00)
Nunivak. *See* Etolin Cape.							
Ochek. *See* Middleton Island.							
Ocean Cape, Yakutat †	206	59	30	00	139	54	00
Ommaney Cape †	119	56	10	30	134	28	30
Ounalashka. *See* Unalashka.							
Pamplona Bank	212	59	35	00	143	00	00
Pamplona Bank	213	59	07	00	142	41	00
Pamplona Bank	213	59	02	00	141	52	00
Parker Point	178	57	37	00	134	40	00
Pitlekai, Eastern Siberia *		67	04	42	173	30	15
Pikmiktalik River, Norton Sound *		63	13	41	(162	26	00)
Plover Bay, Eastern Siberia *		64	22	00	173	21	32
Popoff Strait, Shumagins *		55	19	17	160	30	58
Porpoise Harbor, Nagai Island *		55	45	00	129	54	00
Portage Bay, Frederick Sound	125	55	56	00	130	05	00
Portland Canal, head of	57	55	08	08	159	58	11
Portland Canal, head of	57	57	00	10	133	20	03
Prolewy. *See* Straits Point.							
Providence, Port. *See* Plover Bay.							
Pyramid Island, Lynn Canal *	197	59	11	43	135	27	04

DATE.	AUTHORITY.	DECL. E.	DIP.	DATE.	AUTHORITY.
		° ′	° ′		
1881	U. S. N	27 03		1881	U. S. C. S.
1872	B. A., 2190	27 25		1868	B. A., 2190.
1872	B. A., 2190				
1872	B. A., 2189	26 00		1872	B. A., 2189.
1883	U. S. C. S				
1793	Vancouver				
1872	B. A., 1462	26 00		1872	B. A., 1462.
1793	Vancouver				
1867	B. A., 2067	23 55		1862	B. A., 2067.
1872	U. S. C. S				
1880	Dawson				
1849	Tebienkoff				
1880	U. S. C. S	21 23	69 30	1880	U. S. C. S.
1872	B. A., 1462				
1869	U. S. A				
1874	U. S. C. S				
1849	Tebienkoff				
1779	Arteaga	26 00		1779	Arteaga.
1802	Galiano				
1794	Vancouver				
------	Various authorities				
1878	Nordenskiöld	19 44	77 01	1878	Nordenskiöld.
1869	U. S. A				
1880	U. S. C. S	18 26	74 46	1880	U. S. C. S.
1880	U. S. C. S	20 18	69 29	1880	U. S. C. S.
1872	U. S. C. S				
1882	U. S. C. S	30 51	75 08	1882	U. S. C. S.
1793	Vancouver				
1868	Pender				
1869	U. S. C. S				

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Pyramid Island Harbor, Lynn Canal * †	197	59	10	36	135	28	30
Ratz Harbor †	88	55	52	00	132	30	00
Retreat Point †	172	58	23	30	135	01	30
Rodgers Harbor, Wrangell Land *	------	70	57	00	178	10	00
Rose. *See* Middleton *and* Invisible.							
Safety Cove,* B. C	22	51	31	49	127	56	23
Saginaw Bay, village †	124	56	55	30	134	10	30
Saint Albans, Point	103	57	07	00	----------		
Saint Elias, Mount	211	60	20	45	141	00	12
Saint George Island, Pribiloff Group,* southwest landing-place.	------	53	34	23	169	39	50
Saint Mathew Island. *See* Upright Cape.							
Saint Michael's, Norton Sound *	------	63	28	17	162	04	45
Saint Michael's, Norton Sound*	------	63	29	50	162	05	45
Saint Michael's, Norton Sound*	------	63	28	00	161	52	28
Saint Paul Island, Pribiloff Group *	------	57	07	19	170	19	00
Saint Paul, Kadiak. *See* Kadiak.							
Salisbury Point †	170	58	10	00	134	12	00
Salmon Cove, Observatory Inlet	59	55	15	34	129	43	30
Salmon Cove, Observatory Inlet	59	55	15	40	129	51	45
Sanborn Harbor, Nagai Island *	------	55	07	36	159	56	06
Sannakh Island, Peak of †	------	54	25	20	162	44	00
Semidi Islands, Anowik Island *	------	56	05	13	156	39	20
Senati's Village, Yukon River	------	65	20	54	(151	10	00)
Shakan Village * †	101	59	09	24	133	38	24
Shushartie Bay, Halstead Islet *	14	50	51	22	127	51	20
Simeonoff Harbor, Shumagins * †	------	54	55	30	159	15	03
Simpson, Port, British Columbia *	45	54	33	30	130	26	11
Simpson, Port, British Columbia*	45	54	33	28	130	25	19
Sitka, Parade Ground Station *	150	57	02	51.8	135	19	45
Sitka, Japonski Island Station *	150	57	02	52.6	135	20	19.8
South Point, Security Bay †	123	56	52	00	134	20	00
Sound Point, Hecate Channel	27	52	14	20	128	27	45
Spasskaia Anchorage †	192	58	06	00	135	17	00
Spencer Cape, Cross Sound †	185	58	10	30	136	40	00
Spencer Point. *See* Clarence, Port.							
Stewart. *See* Stuart.							

Date.	Authority.	Decl. E.	Dip.	Date.	Authority.
		° ′	° ′		
1880	U. S. C. S.		75 35	1880	U. S. C. S.
1849	Tebienkoff				
1793	Vancouver				
1881	U. S. N.	20 00		1881	U. S. N.
1879	B. A., 1901				
1869	U. S. N.				
1793	Vancouver				
1874	U. S. C. S.				
1874	U. S. C. S.				
1879	U. S. N.	24 40		1879	U. S. N.
1879	U. S. R. M.	22 37	75 06	1879	U. S. R. M.
1869	U. S. A.				
1880	U. S. C. S.	17 35	68 36	1880	U. S. C. S.
1793	Vancouver				
1793	Vancouver	25 18		1793	Vancouver.
1868	Pender				
1872	U. S. C. S.				
1874	U. S. C. S.				
1874	U. S. C. S.	22 57		1874	U. S. C. S.
1869	U. S. A.				
1881	U. S. N.	30 03	74 49	1881	Nichols.
1867	B. A., 2067				
1872	U. S. C. S.				
1872	B. A., 2426	27 50		1865	B. A., 2426.
1881	U. S. N.	27 54		1881	Nichols.
1867	U. S. C. S.				
1880	U. S. C. S.	29 04	75 12	1880	U. S. C. S.
1869	U. S. N.				
1879	B. A., 1901				
1849	Bubnoff				
1880	U. S. C. S.				

Locality.	Page.	Latitude N.			Longitude W.		
		°	′	″	°	′	″
Straits Point, Wrangell Strait †	115	56	50	00	132	54	00
Stripe Mountain, B. C.†	29	52	26	40	128	25	00
Stuart Anchorage, Pitt Island, B. C.*	36	53	52	05	130	05	11
Stuart Port, Behm Canal †	74	55	38	15	131	44	00
Sullivan Point, Kuiu Island	120	56	38	00	134	16	30
Suquash Anchorage, B. C.*	11	50	38	30	127	14	42
Taku Harbor †	169	57	59	30	133	56	30
Tamgas Harbor, Gravina Islands † at entrance	83	55	03	36	131	29	45
Tolstoi. *See* Broad Cape.							
Tongass, Fort, SE. Alaska †	61	54	45	00	130	41	00
Trincomalee Harbor, Cape Edensaw	54	54	04	00	132	14	00
Trincomalee Harbor, Cape Edensaw	54	54	04	30	132	23	00
Ugolnoi. *See* Coal Point.							
Ukamok. *See* Chirikoff Island.							
Unalashka Island, Ulakhta Spit *	------	53	53	57	166	30	21
Unalashka Island, Iliuliuk Harbor *	------	53	52	53.7	166	31	44.2
Unalashka Island, Priest Rock	------	54	00	36.5	166	22	04
Unalashka. *See also* Chernoffski.							
Upright Cape, St. Mathew Island †	------	60	17	30	172	14	06
Urey Point †	184	57	52	30	136	28	00
Vancouver Mount †	211	60	13	42	139	43	00
Village Island, Cunningham Passage *	44	54	33	51	130	26	36
Wachusett Cove, Bluff Point †	180	57	50	00	135	02	00
Ward Cove, Peninsula Point *	81	55	22	43	131	43	33
Whirlwind Bay, B. C.*	23	51	51	44	127	52	23
Whitewater Bay, Flag Point †	174	57	13	00	134	30	00
Windham Point †	129	57	30	00	133	32	00
Woewodski Harbor †	130	57	12	30	134	05	00
Woewodski Harbor †	130	57	10	00	133	55	00
Wrangell, Port, Astronomical Station	93	56	28	18	132	23	30
Yukon, Fort, Yukon River	------	66	33	47	145	17	47

Date.	Authority.	Decl. E.	Dip.	Date.	Authority.
		° ′	° ′		
1881	U. S. N.	28 30		1869	U. S. N.
	B. A. Chart				
1879	B. A., 1901	27 25		1868	B. A., 1901.
1849	Tebienkoff	28 30		1793	Vancouver.
	Various authorities				
1872	B. A., 581				
1868	U. S. N	30 00		1868	U. S. N.
1883	U. S. C. S	28 38	74 40	1883	U. S. C. S
1869	U. S. C. S				
1881	B. A., 2168				
1880	Dawson				
1867	U. S. C. S				
1874	U. S. C. S	18 38	67 36	1880	U. S. C. S.
1873	U. S. C. S				
1880	U. S. C. S				
1880	U. S. C. S				
1874	U. S. C. S				
1872	B. A., 2426				
1881	U. S. N				
1882	U. S. C. S	28 17	74 36	1882	Nichols.
1879	B. A., 1901				
1869	U. S. N	28 30		1869	U. S. N.
	Various authorities				
1838	Zarembo	27 00		1838	Zarembo.
1799	Ship Eliza				
1881	Nichols	29 17	75 19	1881	U. S. C. S.
1869	U. S. A	36 33	79 50	1869	U. S. A.

TABLE OF APPROXIMATE SAILING DISTANCES FOR THE ALASKAN REGION.

NOTE.—These distances are taken off to represent not the least distance between two points, but the distance over which a vessel would sail to pass from one to the other. They are subject to the errors of the charts.

FROM—	TO—	MILES—	
		Nautical.	Statute.
San Francisco direct, by sea	Portland, Oregon	647	745
Do. do.	Sitka, Alaska	1,296	1,492
Do. do.	Kadiak Island	1,685	1,940
Do. do.	Shumagin Islands	1,825	2,102
Do. via Akutan Pass	Iliuliuk, Unalashka	2,100	2,418
Portland, Oregon, inside passage	Port Townsend, Wash. Ter.	314	362
Do. do.	Fort Tongass, Alaska	880	1,013
Do. do.	Wrangell, Alaska	1,016	1,170
Port Townsend, inside passage	Fort Tongass, Alaska	566	652
Wrangell, Alaska, via interior channels	Sitka, Alaska	200	230
Do. do.	Juneau, Alaska	145	167
Do. do.	Chilkat, Alaska	220	253
Do. do.	Chilkoot, Alaska	222	256
Wrangell, via Sumner Strait and the Pacific	Sitka, Alaska	165	190
Sitka, via Peril Strait	Chilkat, Alaska	170	196
Do. do.	Chilkoot, Alaska	172	199
Sitka direct, by sea	Port Mulgrave	230	265
Do. do.	St. Paul, Kadiak Island	550	633
Do. do.	Shumagin Islands	855	985
Do. do.	Iliuliuk, Unalashka	1,110	1,278
Do. do.	Chichagoff Harbor, Attu Id.	1,815	2,090
Do. do.	St. George, Pribiloff Islands	1,260	1,451
Do. do.	St. Paul, Pribiloff Islands	1,295	1,491
Iliuliuk, Unalashka	St. George, Pribiloff Islands	193	222
Do. do.	St. Paul, Pribiloff Islands	235	271
Do. do.	Ft. Alexander, Nushagak R.	420	484
Do. do.	Kuskokwim River, at Kuskokwak village, Lat. 60°.	400	461
Do. do.	St. Michael's, Norton Sound	735	846
Do. do.	Port Clarence, Alaska	690	795
Do. do.	Plover Bay, E. Siberia	675	777
Do. do.	Diomede Ids., Bering Strait	715	823
St. Michael's, Norton Sound	Yukon River, north mouth	60	69
Do. do.	Plover Bay, E. Siberia	335	386
Diomede Islands, Bering Strait	Point Hope, Arctic coast	152	175
Do. do.	Cape Lisburne, Arctic coast	185	213
Do. do.	Icy Cape, Arctic coast	315	363
Do. do.	Point Barrow, Arctic coast	440	507
Point Barrow, Alaska	Mouth Colville River	128	147
Do. do.	British American boundary	325	374
Do. do.	Mackenzie River, mouth	440	507
Shore line of coast and islands, S. Boundary	Cape Spencer, Alaska	7,115	8,193*
Shore line thence to the NE. boundary at	Demarkation Point	8,700	10,018

* The total shore line of the Territory thus appears to be approximately 15,815 nautical or 18,211 statute miles.

TABLE

OF ROUTES BETWEEN THE GULF OF GEORGIA AND YAKUTAT BAY.

NOTE.—Since the intricacy of the channels on the coast treated of, and the geographical sequence which it was found necessary to follow, rendered it impracticable to describe the various steamer routes consecutively—especially as the latter are subject to successive changes as the different channels become better known—it was thought best to prepare a schedule of routes by which the successive portions might more readily be referred to. This will render unnecessary constant reference to the general index for that purpose, though special harbors and points may still be most readily found from the index. The pages referred to contain the required description in one order; when the route is in the reverse order the numeration of the pages is reversed, and the reader will refer to the later page first and trace the route in its proper order. To save time for the inquirer the routes north and south over the same bodies of water are recapitulated in full under their respective headings.

NORTHWARD ROUTES.

INLAND PASSAGES.

Route A.—Gulf of Georgia to Dixon Entrance at Port Simpson; pp. 1–47.

Route B.—Port Simpson to Sitka *via* Wrangell and Peril Straits.

1. Dixon Entrance to Point Alava; pp. 61–63, 70–71.
2. Revillagigedo Channel and Tongass Narrows; pp. 75–82.
3. Kasa-an Bay; pp. 85–86.
4. Clarence Strait from Kasa-an Bay to Point Harrington; pp. 87–89.
5. Stikine Strait; pp. 93–94.
6. Point Highfield anchorage and Wrangell; pp. 91–93.
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9. Frederick Sound to Chatham Strait; pp. 127–122.
10. Chatham Strait from Point Gardner to Kootznahoo and Peril Strait; pp. 174–177.
11. Peril Strait to Salisbury Sound; pp. 167–160.
12. Salisbury Sound to Sitka Harbor; pp. 156–157.

Route C.—Port Simpson to Sitka, *via* Sumner Strait and the Pacific.

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4. Clarence Strait from Kasa-an Bay to Point Harrington; pp. 87–89.
5. Stikine Strait; pp. 93–94.
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7. Sumner Strait from Wrangell to Cape Decision; pp. 108–100.
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9. Outer coast from Cape Ommaney to Sitka Sound; pp. 132–137.
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Route D.—Wrangell to Juneau and Chilkat; eastern route.

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2. Wrangell Strait to Frederick Sound; pp. 112–117.
3. Frederick Sound to Stephens Passage; pp. 127–125, 128–129.
4. Stephens Passage to Gastineau Channel and Juneau Harbor; pp. 167–172.
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6. Lynn Canal from Point Retreat to Point Seduction; pp. 193–196.
7. Point Seduction to Chilkoot, etc.; pp. 199–200.
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Route E.—Wrangell to Chilkat and Juneau; western route.

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10. Stephens Passage, Point Retreat to Point Salisbury; pp. 174–172.
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Route F.—Sitka to Glacier Bay; inside route.

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2. Salisbury Sound *via* Peril Strait to Chatham Strait; pp. 160–167.
3. Chatham Strait from Peril Strait to Point Couverden; pp. 178–181.
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Route G.—Sitka to Glacier Bay; outside route.

1. Sitka Sound to Salisbury Sound; pp. 157–158.
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OUTSIDE PASSAGE.

Route H.—Sitka to Yakutat Bay

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SOUTHWARD ROUTES.

OUTSIDE PASSAGE.

Route A.—Yakutat Bay to Sitka.

1. Yakutat Bay to Cape Spencer; pp. 208–201.
2. Coast from Cross Sound to Sitka Sound; pp. 185–182, 158–157.
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1. Glacier Bay *via* Icy Strait to Cross Sound; pp. 188–185.
2. Port Althorp; pp. 186.
3. Cross Sound to Sitka Sound; pp. 185–182, 158–157.
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Route C.—Glacier Bay to Sitka; eastern route.

1. Glacier Bay *via* Icy Strait to Chatham Strait; pp. 189–190.
2. Chatham Strait from Point Couverden to Peril Strait; pp. 182–177.
3. Peril Strait to Salisbury Sound; pp. 167–160.
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Route D.—Chilkat or Chilkoot to Juneau, Wrangell, Kasa-an, Tongass and Port Simpson.

1. Chilkat to Point Seduction; pp. 199–196.
2. Chilkoot to Point Seduction; pp. 200–199.
3. Point Seduction to Point Retreat; pp. 196–194.
4. Stephens Passage, Point Retreat to Point Salisbury and Juneau Harbor; pp. 174–171.
5. Stephens Passage, Point Salisbury to Point Windham; pp. 170–168.
6. Frederick Sound, Point Windham to Wrangell Strait; pp. 129–126.
7. Wrangell Strait to Sumner Strait; pp. 117–112.
8. Sumner Strait from Wrangell Strait to Port Wrangell; p. 108.
9. Port Wrangell and Stikine Strait; pp. 94–93.

SOUTHWARD ROUTES—Continued.

10. Clarence Strait, Point Harrington to Kasa-an Bay; pp. 89–87.
11. Kasa-an Bay; pp. 85–86.
12. Kasa-an Bay to Point Higgins; p. 82.
13. Revillagigedo Channel and Tongass Narrows; pp. 82–75.
14. Port Alava to Dixon Entrance and Tongass; pp. 71–70, 63–61.
15. Port Simpson; pp. 45–47.

Route E.—Chilkat to Kootznahoo and Shakan.

1. Chilkat to Point Seduction; pp. 199–196.
2. Point Seduction, Lynn Canal to Point Retreat; pp. 196–194.
3. Chatham Strait, Point Couverden to Peril Strait; pp. 182–177.
4. Chatham Strait, Peril Strait to Point Gardner; pp. 177–174 .
5. Chatham Strait, Point Gardner to Cape Ommaney; pp. 122–119.
6. Cape Decision *via* Sumner Strait to Shakan; pp. 100–101.
7. Shakan Harbor and Inlet; pp. 101–102.

Route F.—Sitka to Port Wrangell *via* Peril Strait; inside passage.

1. Sitka Harbor to Salisbury Sound; pp. 156–157.
2. Salisbury Sound *via* Peril Strait to Chatham Strait; pp. 160–167.
3. Chatham Strait from Peril Strait to Point Gardner; pp. 177–174.
4. Frederick Sound from Point Gardner to Wrangell Strait; pp. 122–127.
5. Wrangell Strait to Sumner Strait; pp. 117–112.
6. Sumner Strait, Wrangell Strait to Port Wrangell; pp. 107–108.
7. Port Wrangell Harbor; pp. 92–93.

Route G.—Sitka to Port Wrangell; outer passage.

1. Sitka Sound to Cape Ommaney; pp. 137–132.
2. Cape Ommaney to Sumner Strait; pp. 99–100.
3. Sumner Strait to Port Wrangell; pp. 100–108.

Route H.—Wrangell to Shakan.

1. Port Wrangell *via* Sumner Strait to Wrangell Strait: p. 108.
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Route I.—Tlevak and Kaigahnee Straits.

1. Port Bucareli; pp. 99–97.
2. Tlevak and Kaigahnee Strait; pp 70–65.

Route J.—Dixon Entrance to the Gulf of Georgia.

1. Port Simpson to Cape Mudge; pp. 47–1.

NOTE ON PRONUNCIATION OF NAMES.

The present work being the first in which any uniform phonetic spelling of native and Russian geographical names in Alaska has been attempted, it is proper that a few words be said on the subject to assist in the proper pronunciation of unfamiliar names. No system which could be adopted would give universal satisfaction, but uniformity and the utmost attainable simplicity, whatever system be adopted, are highly important.

The sounds adopted for native and Russian words are essentially those in use among philologists, and which were made familiar to those engaged in such studies in America by George Gibbs under the auspices of the Smithsonian Institution many years since, and have been almost universally adopted in writing and spelling Indian names.

Some exceptions, in the interest of simplicity, have been made to this rule. Names which have attained a wide currency in the daily press and on charts in a corrupted form have rarely been reformed, and no attempt has been made to restore exact equivalents of the original word. *Example:* Stikine River (instead of Stakhin River) has been adopted.

Where the name has appeared frequently on charts and in geographical literature in one form, and has been only during the last few years commonly used in a corrupted form, the proper pronunciation has been adopted in the Pilot. *Example:* Unalashka Island, and not Onalaska or Oonalaska, has been adopted; Kadiak Island, and not Kodiac or Codiak Island.

In such cases the best judgment of the compiler has been used, in conformity with the nomenclature of the Coast Survey charts, but, as a matter of course, infallibility is not attainable, and errors doubtless remain to be corrected in future.

Russian names, as a general rule, are accented on the syllable before the last, as Wrang'ell, Ba-ran'-off, Ya-ko'bi, Ku-pre-an'off. To this rule there are a good many exceptions when the preceding syllable is accented, as Chich'a-goff, Shu'ma-gin, etc. These must be learned by experience.

Indian or native names are generally accented on the last syllable when it does not end with a vowel, and on the preceding syllable when it does. *Examples:* Kad-iak', Ton-gass', A-dakh', Yak-u-tat', Chil-kat'; and Sit'ka, Un-a-lash'ka, Nu-la'to, etc.

The values of vowels and consonants used in transliterating these names are much as in English, with the following invariable limits:

The sounds of *a* in *path, part*, etc., and short *a* as in *cat, rat*, etc., are represented by *a* only.

The sound of *e* in *whey* (*a* in *hay*, etc.) is represented by *e* only.

The sounds of *i* in *ill* and long *i* as in *Columbia* (like *ee* in *feel*) are represented by *i* only.

The sound of *i* in *bridle, uy* in *buy, y* in *spy*, etc. is represented by *ai* only.

The sound of *o* as usual in English. The sound of *ow* as in *cow* by *au* only.

The sound of *u* in *rule* (*oo, ou*) is represented by *u* only; short *u*, as in *duck*, is almost unknown in Russian or aboriginal Alaskan names.

The sound of *y* before a vowel is represented by *i*, as in Kad-iak' (*Kad-yak'*), Terent-ieff (*yeff*), Iliuliuk (*Il-yool-yook'*), etc.

The sound of *y* final by *i*.

The consonants in general as in English.

The Russian B is pronounced by that nation as equivalent sometimes to *ff*, sometimes to a sound between *v* and *w*, and, generally, like *v*. It is much the same as the German *w*. It is rendered here, according to the sound intended, either by *v, w*, or *ff*. The *f* is doubled at the end of words like *Petroff* to distinguish the sound from that of *f* in *of*.

The sound of *ch* in German, not represented by any English character, has been rendered by *kh* in this work.

The sound of *ch* as in *church* is represented by *ch* only.

The spelling of personal proper names, such as *Bering, Wrangell*, etc., has been carefully conformed to the practice of the individuals who bore them, as indicated by their autographs.

METEOROLOGICAL TABLES.

NOTE.

In 1879, when the first pages of the Coast Pilot were in the hands of the printer, an Appendix was separately printed in advance to the number of two hundred and fifty copies, under the title:

U. S. Coast and Geodetic Survey, Carlile P. Patterson Superintendent; Pacific Coast Pilot, Coasts and Islands of Alaska. Second Series. Appendix I. Meteorology. 376 pages, 13 plates, 28 maps, 4 to. *Washington: Government printing office*, 1879.

CONTENTS.

Letter of transmission, pp. 5–6.
Meteorological discussions and tables, pp. 15–160.
Partial list of charts and maps on the region, pp. 162–223.
Partial list of books and other publications on the region, pp. 225–376.
Maps and plates.

This appendix is not reprinted. The meteorological tables which follow are essentially the synoptical tables printed in the Appendix of 1879, with revisions and addition of a good deal of new matter which has since been made available.

SYNOPTICAL TABLES.

A.—Atmospheric pressure.

B.—Temperature of the air.

C.—Temperature of the sea water.

D.—Precipitation.

E.—Direction of winds.

Notes on the tables.

A.—MEAN ATMOSPHERIC PRESSURE.

PLACE.	JAN.	FEB.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.	YEAR.
Adakh Island, Aleutians	.....	.....	.....	.....	.....	.....	.....	30.254	.....	.....	.....	.....	.....
Aian, Okhotsk Sea	29.845	29.957	29.896	29.853	29.753	29.764	29.661	29.795	29.839	29.891	29.823	29.824	29.825
Amchitka Island, Aleutians	.....	.....	.....	.....	.....	.....	30.191	.....	.....	.....	.....	.....	.....
Anadyr River, E. Siberia	30.143	30.089	29.883	29.972	29.917	29.928	.....	.....	.....	29.806	29.879	29.927	**29.881**
Atka Island, Aleutians	.....	.....	.....	.....	.....	.....	.....	30.164	.....	.....	.....	.....	.....
Attu Island, Aleutians	29.375	29.638	29.598	29.737	29.973	30.209	29.794	29.659	29.887	29.987	29.526	29.520	29.742
Bering Island	29.416	30.075	29.807	29.869	29.828	29.761	29.743	29.864	29.830	29.683	29.438	29.547	29.738
Duē Light-house, Sakhalin Island	29.878	29.910	29.918	29.745	29.603	29.504	29.528	29.501	29.615	29.823	29.788	29.808	29.717
Esquimalt, B. C	29.999	29.898	29.831	29.988	30.047	29.995	.....	.....	29.988	29.888	30.093	30.219	**29.995**
Fort Alexander, Nushagak River, Alaska	29.636	29.768	30.126	30.059	29.927	29.856	29.940	30.026	29.840	29.837	29.734	29.659	29.867
Fort Tongass, Alaska	29.675	29.778	29.846	29.826	29.836	29.960	29.964	30.018	29.966	29.857	29.644	29.742	29.843
Fort Wrangell, Alaska	.....	.....	.....	.....	29.767	29.869	29.880	29.958	29.731	.....	.....	.....	**29.729**
Fort Yukon, Yukon River	.....	.....	.....	.....	.....	.....	29.771	.....	.....	.....	.....	.....	.....
Hakodadi	29.909	29.954	30.032	29.986	29.908	29.801	29.797	29.820	29.928	30.036	30.032	29.935	29.925
Hazelton, Skeena River, B. C	**30.18**	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30.47	.....
Iliuliuk, Unalashka	29.610	29.567	29.618	29.657	29.684	29.732	29.782	29.789	29.634	29.547	29.534	29.636	29.650
Kotzebue Sound	.....	.....	.....	.....	.....	.....	**29.954**	.....	29.763	29.548	.....	.....	.....
Kusunai, Sakhalin Island	29.785	30.086	30.067	29.930	29.993	29.860	.....	.....	.....	.....	29.913	30.097	.....
Kyska Harbor, Aleutian Islands	.....	.....	.....	.....	.....	.....	30.074	.....	.....	.....	.....	.....	.....
Möller Islands, Aliaska Peninsula	29.25	29.33	29.42	29.67	.....	.....	.....	.....	.....	.....	.....	29.42	.....
New Westminster, B. C	30.075	30.040	30.020	30.001	29.985	29.961	30.032	30.012	30.028	30.008	29.938	29.926	30.001
Nikolaieffsk, Amur River	29.869	29.922	29.859	29.807	29.744	29.739	29.726	29.782	29.837	29.812	29.805	29.840	29.812
Nulato, Yukon River, Alaska	30.063	29.986	29.854	29.788	29.781	.....	**29.948**	.....	.....	.....	.....	29.688	.....
Okhotsk, E. Siberia	29.854	29.923	29.902	29.846	29.799	29.772	29.725	29.796	29.850	29.816	29.760	29.710	29.813
Petropavlovsk, Kamchatka	29.519	29.632	29.774	29.773	29.701	29.651	29.693	29.810	29.803	29.723	29.624	29.539	29.887
Pitlekai, E. Siberia	29.64	30.24	29.89	29.79	29.91	29.78	29.56	.....	.....	29.84	29.68	29.95	.....
Portland, Oregon	30.211	30.243	30.129	30.183	30.113	30.119	30.071	30.065	30.060	30.096	30.030	30.248	30.131
Queen Charlotte Islands	.....	.....	.....	.....	.....	**30.04**	30.07	30.10	.....	.....	.....	.....	.....
St. Michael's, Norton Sound	29.968	30.001	29.995	29.869	29.687	29.806	29.885	29.815	29.718	29.647	30.003	29.785	29.848
St. Paul Island, Bering Sea	29.626	29.609	29.794	29.716	29.697	29.759	29.898	29.926	29.747	29.564	29.622	29.587	29.712
St. Paul, Kadiak Island	29.549	29.538	29.574	29.620	29.659	29.713	29.825	29.709	29.599	29.524	29.514	29.487	29.609
Sitka	29.604	29.670	29.684	29.763	29.814	29.845	29.903	29.840	29.767	29.650	29.572	29.610	29.727
Udsk Village, E. Siberia	29.54	29.46	29.60	.....	.....	.....	.....	.....	.....	.....	29.57	29.60	.....
Unalaklik, Norton Sound	30.199	.....	.....	.....	.....	.....	.....	.....	.....	29.805	29.564	29.736	.....

B.—MEAN TEMPERATURE OF THE AIR.

Place.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
Aian, Okhotsk Sea	— 5.1	2.0	12.5	24.4	34.3	45.4	53.7	53.9	46.5	28.7	10.3	— 3.3	23.7	51.0	28.5	— 2.1	25.3
Ala River, E. Siberia	.....	.....	.....	28.4	47.1	61.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Anadyr River, E. Siberia	—10.5	—27.9	— 1.7	5.0	33.7	43.7	.....	.....	.....	14.8	— 7.6	—21.6	12.3	.....	.....	—20.0	12?
Atka, Island, Aleutians	.....	.....	.....	.....	39.9	42.1	49.0	50.3	.....	.....	.....	.....	.....	47.1	.....	.....	.....
Attu Island, Aleutians	31.2	32.0	29.0	36.7	39.6	48.8	52.4	51.6	47.8	41.1	35.5	33.9	35.1	50.9	41.4	32.3	39.9
Bering Island	25.5	28.7	25.2	28.6	39.7	42.7	48.2	54.1	50.5	38.8	28.7	27.0	31.2	48.3	39.3	27.1	36.5
Duë Light-house, Sakhalin Island	3.8	8.8	18.0	30.8	42.4	52.0	60.3	61.6	53.1	40.5	21.1	7.9	30.4	58.0	38.2	6.8	33.4
Fort Alexander, Nushagak River	21.6	1.9	22.8	39.5	42.3	54.2	55.0	57.5	50.8	43.7	29.7	3.9	34.9	55.6	41.4	9.1	35.2
Fort Franklin, H. B. Territory	—22.3	—16.7	— 5.4	12.3	35.1	48.0	52.1	51.1	41.0	22.5	— 0.1	—10.7	14.0	50.4	21.1	—16.6	17.2
Fort Kenai, Cook's Inlet	.....	.....	.....	.....	.....	.....	59.6	60.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Tongass, Alaska	33.9	36.2	38.5	44.8	50.3	56.4	58.7	59.1	53.1	48.8	41.0	38.1	44.5	58.1	47.6	36.1	46.5
Fort Wrangell, Alaska	22.6	30.1	30.3	42.2	48.7	55.7	58.6	57.0	52.1	46.1	30.7	32.2	40.4	57.1	43.0	28.3	42.2
Fort Yukon, Yukon River	—26.8	—26.4	—11.2	12.7	41.2	53.5	65.7	63.1	38.7	21.6	— 8.3	—18.4	14.6	56.7	17.4	—23.8	16.8
Hakodadi	27.0	29.4	35.8	44.6	52.5	59.7	67.2	71.9	65.3	53.4	42.9	32.1	44.3	66.2	53.8	29.5	48.5
Hazelton, Skeena River, B. C	— 1.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	— 1.5	.....	.....	.....	.....	.....
Ikogmut, Yukon River	2.3	— 5.3	2.1	23.5	33.6	48.9	51.2	48.3	43.4	27.4	12.9	5.7	19.7	49.5	27.9	0.9	24.5
Iliuliuk, Unalashka	30.0	31.5	29.9	33.3	38.7	44.9	49.1	51.9	46.9	38.8	33.8	30.9	34.0	48.6	39.8	30.8	38.3
Kolmakoff Redoubt, Kuskokwim R	— 0.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kotzebue Sound	—12.0	—15.5	— 6.0	14.5	30.0	38.8	50.0	44.5	40.6	25.0	1.1	5.2	12.8	44.4	22.2	— 7.4	18.0
Kusunai, Sakhalin Island	13.0	12.8	21.4	35.9	45.0	50.0	58.5	65.8	53.8	44.7	32.3	21.8	34.1	58.1	43.6	15.9	37.9
Möller Islands, Aliaska Peninsula	25.9	17.8	27.3	31.9	.....	.....	.....	.....	.....	.....	.....	24.5	.....	.....	.....	22.7	.....
Muravieff, Sakhalin Island	6.9	10.1	19.1	31.7	41.4	47.7	55.1	60.3	55.5	44.9	30.6	14.0	30.7	54.4	43.7	10.3	34.8
New Westminster, B. C	34.2	38.5	43.5	46.4	52.2	57.6	62.8	64.2	57.9	49.1	40.3	34.5	35.7	47.4	61.5	49.1	48.4
Nikolaieffsk, Amur River	—11.4	— 6.2	7.5	26.1	38.7	54.5	62.1	60.8	50.2	34.7	13.8	— 5.8	24.1	59.1	32.9	— 7.8	27.1
North Foreland, Cook's Inlet	22.4	22.0	33.5	.....	.....	.....	.....	.....	.....	30.9	34.4	31.5	.....	.....	.....	25.3	.....
Nulato, Yukon River	—17.7	— 7.8	18.9	27.1	45.3	66.9?	66.2	.....	60.0	.....	.....	— 9.8	30.4	.....	.....	—11.8	.....
Okhotsk, E. Siberia	—10.7	— 6.9	7.3	21.9	36.1	46.2	55.2	55.9	46.6	26.2	5.7	— 9.2	21.8	52.4	26.2	— 8.9	22.8
Petropavlovsk, Kamchatka	16.9	14.0	23.4	30.4	39.9	50.5	58.3	58.6	51.4	40.1	29.3	20.8	31.2	55.9	40.3	17.2	36.1
Pitlekai, E. Siberia	—14.1	—14.6	— 6.9	— 2.0	19.8	30.9	36.9	.....	.....	22.6	2.1	— 9.0	3.6	.....	.....	—12.6	.....
Point Barrow, Alaska	—18.7	—24.0	—12.1	+ 1.6	20.5	32.9	38.7	38.4	25.9	2.2	— 6.7	—16.0	3.3	36.4	5.2	—19.6	5.5
Port Clarence, Alaska	—11.2	0.7	4.5	11.5	32.7	40.4	49.8	45.7	40.7	22.6	0.7	0.3	16.2	45.3	21.3	— 3.4	19.8
Port Graham, Cook's Inlet	20.4	23.8	23.8	35.7	41.4	49.6	55.4	51.8	48.9	37.6	29.3	23.2	33.6	52.3	38.6	22.5	36.7
Portland, Oregon	40.6	40.7	42.2	51.6	56.5	65.6	69.5	68.1	63.0	53.2	48.4	39.3	50.1	67.7	54.8	40.2	53.2
Port Providence, E. Siberia	—20.5	—16.0	— 6.2	21.5	29.5	38.0	44.4	42.8	37.5	25.5	17.5	3.7	14.9	41.7	26.8	—10.9	18.1
Port Simpson, B. C	29.8	35.2	38.1	.....	.....	.....	.....	.....	.....	.....	45.9	31.8	.....	.....	.....	32.3	.....
Queen Charlotte Islands, B. C	.....	.....	.....	.....	.....	53.5	57.8	57.5	.....	.....	.....	.....	.....	56.3	.....	.....	.....
St. Michael's, Norton Sound	0.2	4.2	7.5	19.9	34.3	46.1	54.7	53.4	45.5	32.4	14.7	6.1	20.6	51.4	30.9	3.5	26.6
St. Paul Island, Bering Sea	28.5	25.7	25.7	29.2	34.9	41.5	46.4	48.4	45.1	38.9	34.8	29.4	29.9	45.4	39.6	27.9	35.7
St. Paul, Kadiak Island	30.0	30.9	33.2	38.0	43.6	50.5	54.8	56.0	50.4	42.5	35.4	31.4	38.6	53.8	42.8	30.8	41.3
Sitka	31.4	32.9	35.7	40.8	47.0	52.4	55.5	55.9	51.5	44.9	38.1	33.3	41.2	54.6	44.9	32.5	43.3
Udsk, E. Siberia	— 9.4	— 4.2	16.1	28.9	39.4	56.7	61.3	60.3	49.3	29.5	1.2	—13.3	28.1	59.4	26.7	— 9.0	30.8
Unalaklik, Norton Sound	—10.2	.....	.....	.....	.....	.....	.....	.....	.....	19.2	8.8	3.4	.....	.....	.....	.....	.....

C.—MEAN TEMPERATURE OF SURFACE SEA-WATER.

Locality.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Queen Charlotte Islands						51.7	55.6	55.4					
Sitka	39	39	39.5	42	46.5	48	49	50	51.5	48.9	44.4	[41.7]	[45.0]
Litnya Bay					47.3								
Port Mulgrave					51.3								
Port Etches					50.6								
Middleton Island						47.7							
Kadiak, surface						48.2			48.7				
Kadiak, at 5 fathoms									50.5				
Semidi Islands						48.2							
Chirikoff Island						47.2							
Chignik Bay						47.5							
Chiachi Islands						48.5							
Shumagin Islands, surface	[33.0]	[33.0]	[34.5]	37.5		44.0	45.5	52.0	53.7	47.5		34.5	
Shumagin Islands, at 5 fathoms				37.0		43.6	45.7	51.0	53.7	47.1			
Unalashka, surface	35.3	35.3	34.6	38.0	40.8	44.4	51.5	51.9	49.9	43.1	34.3	34.1	41.1
Unalashka, at 5 fathoms	38.8	35.8	36.3	38.5	39.7	40.2						39.4	
St. Paul Island, Pribiloff Islands	37.0	35.3	33.5	33.7	34.0	40.0	45.6	48.6	47.8	43.0	41.0	36.1	39.7
Atka Island, surface								46.8					
Atka Island, at 5 fathoms								43.9					
Adakh Island, surface								45.6					
Adakh Island, at 5 fathoms								44.5					
Amchitka Island, surface							42.6						
Amchitka Island, at 5 fathoms							42.8						
Kyska Island, surface							41.9						
Kyska Island, at 5 fathoms							41.9						
Attu Island, surface							44.2						
Attu Island, at 5 fathoms							42.0						
Petropavlovsk	[32.0]	[32.0]	[32.0]	[33.5]	[34.5]	38.5	55.5				[33.5]	[32.0]	
Port Möller	[33.0]	[32.5]	[32.5]					61.2				[33.0]	
Hagmeister Island	[33.0]	[32.5]	[32.0]					57.3				[33.0]	
Nunivak Island	[33.0]	[32.5]	[32.0]				53.9					[33.5]	
St. Michael's	[32.5]	[32.5]	[32.8]	[33.0]			56.0	56.1	49.6		[34.5]	[33.0]	
Port Clarence	[32.0]	[32.0]	[32.5]	[32.5]					38.9			[32.5]	
Kotzebue Sound	[33.0]	[32.0]	[32.5]	[32.5]			50.3	50.9	43.7	38.3		[32.5]	

Note.—The order in this table is geographical, from south northward.

D.—MEAN PRECIPITATION.

Place.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Aian, Okhotsk Sea	0.52	0.38	0.37	0.54	2.06	1.96	3.86	9.01	10.33	3.93	1.27	0.53	34.76
Atka Island, Aleutians					4.49	1.76	4.25	8.01					
Attu Island, Aleutians	5.19	2.91	2.43	2.16	1.20	0.12	0.00	4.62	4.06	8.91	6.46	6.52	44.58
Bering Island	0.61	2.98	0.61	1.03	[1.71]	2.03	1.45	1.07	1.32	3.29	2.23	2.21	20.54
Burnaby Island, Queen Charlotte Islands	14.52	8.88											
Fort Alexander, Nushagak River	4.80	1.42	2.72	0.47	1.76	1.18	2.86	2.86	3.75	1.91	3.38	1.44	28.55
Fort Kenai, Cook's Inlet							0.35	1.06					
Fort Tongass, Alaska	12.97	10.79	8.16	9.57	7.70	4.14	7.02	4.28	11.26	14.11	14.97	13.33	118.30
Fort Wrangell, Alaska	3.43	2.26	1.25	5.10	3.84	3.47	3.41	3.11	8.61	8.44	7.62	10.00	60.54
Hakodadi	1.90	2.32	2.19	2.38	3.92	3.15	7.57	4.00	4 11	3.51	3.91	4.62	43.58
Iliuliuk, Unalashka	3.49	2.32	3.27	2.05	2.80	1.53	1.83	[1.80]	1.86	5.47	5.17	6.35	[37.94]
Nikolaieffsk, Amur River	0.40	0.29	0.59	1.25	1.15	1.23	1.05	0.91	2.83	0.56	1.35	0.59	12.20
Nulato, Yukon River	1.70	1.35	2.22	0.53	0.00					2.00	2.20	1.25	
Okhotsk, E. Siberia	0.14	0.13	0.25	0.32	0.20	0.42	0.90	0.81	0.71	0.39	0.14	0.12	4.53
Petropavlovsk, Kamchatka	4.40	4.50	7.65	6.90	5.00	3.14	2.08	2.52	4.80	8.43	6.23	5.40	61.05
St. Michael's, Norton Sound	0.23	0.09	0.27	0.68	0.35	1.06	1.48	2.47	2.01	1.32	0.44	0.90	11.30
St. Paul Island, Bering Sea	3.10	3.31	2.63	1.58	1.49	1.92	3.55	3.39	3.10	4.07	3.40	3.46	35.00
St. Paul, Kadiak Island	8.01	3.31	10.60	5.52	5.42	5.62	1.14	3.71	5.94	7.14	6.61	9.90	72.92
Sitka	7.35	6.45	5.29	5.17	4.13	3.62	4.19	6.96	9.66	11.83	8.65	8.39	81.69

E.—APPROXIMATE PREVAILING DIRECTIONS OF WINDS.

Locality.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.
Aian, Okhotsk Sea	SW.	NE.	NE.	NE.	NE.	NE.	NE.	NE.	NE.	NE.	NE.	NE. & SW.	NE.	NE.	NE.	NE. & SW.	NE.
Anadyr River, E. Siberia	SW.	NW.	W NW.	NW.	W NW.	S SW.	.....	.....	.....	W.	W NW.	NW.	NW.	.....	.....	NW.	.....
Atka Island, Aleutians	.....	.....	.....	.....	SE.	SE.	W.	W.	.....	.....	.....	.....	.....	W.	.....	.....	.....
Attu Island, Aleutians	S.	S.	N.	S.	*S.*	*NE.*	*W.*	W.	S.	N.	N.	NW.	*S.*	*W.*	N.	S.	*S.*
Dué Light-house, Sakhalin	N.	N.	N.	N.	S.	S.	S.	SW.	SW.	S.	NW.	N.	S.	S.	S SW.	N.	N. & S.
Fort Kenai, Cook's Inlet	.....	.....	.....	.....	.....	.....	S.	S.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Tongass Alaska	NE.	E.	E.	S SE.	S.	S.	S SE.	S.	S.	SE.	E.	E.	SE.	S.	S SE.	NE.	S SE.
Fort Wrangell, Alaska	E NE.	NE.	E NE.	SE.	E.	W NW.	W.	W.	E SE.	NE.	NE.	NE.	E.	W.	NE.	NE.	Var.
Ikogmut, Yukon River	NE.	N.	NE.	N.	E NE.	SW.	NE.	S SW.	E NE.	E.	NE.	E.	NE.	SW.	NE.	NE.	NE.
Iliuliuk, Unalaska	N.	SW.	S.	SW.	NNW. & var.	S SW.	SW.	W SW.	W.	W.	W.	W NW.	SW. ?	SW.	W.	N.	SW.
Kusunai Sakhalin Island	E.	E SE.	E SE.	SE.	E.	E.	E.	E.	E.	E.	E.	W.	E SE.	E.	E.	E. & W.	E.
Muravieff, Sakhalin Island	E.	SW.	SW.	SW.	SW.	SW.	E NE.	E.	E NE.	W.	W.	W NW.	SW.	E.	N NW.	Var.	SW.
Nikolaieffsk, Amur River	W.	W.	W.	W. & E.	E.	SE.	SE.	SE.	E & W.	W.	W.	W.	W. & E.	SE.	W.	W.	W. & E.
North Foreland, Cook's In't.	N.	N.	NE.	.....	.....	.....	.....	.....	.....	N.	NE.	NE.	.....	.....	.....	NE.	.....
Nulato, Yukon River	SW.	N.	NW. & NE.	N NE.	N NW.	.....	.....	.....	.....	.....	.....	E. & W.	N.	.....	.....	Var.	.....
Okhotsk, E. Siberia	N.	N.	N.	N.	SE.	SE.	SE.	SE.	N.	N.	N.	N.	N.	SE.	N.	N.	N.
Petropavlovsk, Kamchatka	N.	N.	N.	NW.	NW.	NW. & S.	NW.	NW.	NW.	NW.	NW.	NE.	NW.	NW.	NW.	N NW.	NW.
Pitlekai, E. Siberia	N.	N NW.	N.	N NW.	N NW.	S SW.	*S SW.*	.....	.....	N NW.	N NW.	N.	NW.	.....	.....	N.	.....
Port Simpson, B. C	N.	N.	N.	.....	.....	.....	.....	.....	.....	.....	SE.	N.	.....	.....	.....	N.	.....
Queen Charlotte Islands	.....	.....	.....	.....	.....	SW.	SW.	SE.	.....	.....	.....	.....	.....	SW.	.....	.....	.....
St. Michael's, Norton Sound	S.	NE.	N.	NE.	N NE.	N NE.	S.	S.	N NE.	NE.	NE.	NE.	N.	Var.	NE.	NE.	N NE.
St. Paul Island, Bering Sea	E.	S. & E.	W.	N. & E.	N. & E.	S. & W.	SW.	S. & E.	N NE.	NW.	Var.	S.	N.	S.	W.	S.	Var.
St. Paul, Kadiak Island	N NE.	N NW.	NE. & SW.	NE.	NE.	E.	SW.	E SE.	NE.	N.	NW.	NW.	NE.	E SE.	NW.	N.	Var.
Sitka	E NE.	E.	E.	Var.	W.	W.	SW.	SW.	S.	E.	E.	E.	Var.	SW.	E.	E.	S. & E.

NOTES ON THE PRECEDING TABLES.

SOURCES OF INFORMATION COMPRISED IN THE SYNOPTICAL TABLE OF MEAN ATMOSPHERIC PRESSURE.

The results at Adakh Island, Aleutians; Aian, Okhotsk Sea; Amchitka Island, Aleutians; Anadyr River mouth, Eastern Siberia; Duë Light-house, Sakhalin Island; Esquimalt, British Columbia; Fort Tongass, Fort Wrangell, and Fort Yukon, Alaska; Hakodadi, Japan; Iliuliuk, Unalashka Island, Aleutians; Kotzebue Sound, Alaska; Kusunai, Sakhalin Island; Kyska Island, Aleutians; Möller Islands, Port Möller, Aliaska Peninsula; New Westminster, British Columbia; Nikolaieffsk, Amur River, Siberia; Nulato, Yukon River, Alaska; Okhotsk, Siberia; Petropavlovsk, Kamchatka; Portland, Oregon; St. Michael's, Norton Sound, Alaska; St. Paul Island, Pribiloff Islands, Bering Sea; Sitka, Alaska; Udsk Village, Siberia; and Unalaklik, Norton Sound, Alaska; are copied from the Synoptical Table of mean Atmospheric Pressure, Appendix I, 1879, page 24.

Those at Attu Island (Chichagoff Harbor,) Aleutians; Bering Island; Fort Alexander, Nushagak River, Alaska; Hazelton on the Skeena River, British Columbia; Pitlekai, Eastern Siberia; Queen Charlotte Islands; and St. Paul, Kadiak; are taken from observations at those localities, which have been since made available.

The observations additional to those used in 1879 are derived from the records of the U. S. Signal Service, from Wild's great work on the Climate of Russia, from the publications of the Pacific Railway commission and Geological Survey of the Dominion of Canada, from the observations of the Vega Expedition and from private manuscript records, especially a more than ten years' record kept at St. Paul, Kadiak, by the agent of the American Russian Commercial Company from 1868 to 1880, of which one year (observed by Helmken) was included in Appendix I, 1879, pp. 72–73. To Mr. W. J. Fisher, Mr. H. P. Cope, Mr. Nikolai Pavloff, Mr. Wagner of Chernoffski Village, Unalashka, and Capt. E. P. Herendeen, the Survey is indebted for valuable meteorological material which will be published more in full hereafter.

All the figures are for *new style* except those for Udsk Village, which are uncertain. The barometer is taken at 32°.0 F., (0°.0 Cent.,) and all data in the table are reduced to this temperature, corrected for instrumental error as far as known and reduced to sea-level, unless otherwise here stated. Figures in black-faced type indicate a break in the series which was supplied by interpolation to obtain a mean value.

At Duë Light-house, Kusunai, and Udsk Village, the height above the sea is unknown and the correction to sea-level is believed to have been applied by the observer. It will not exceed in either case +0.38 inch.

The observations about the Queen Charlotte Islands are uncorrected for temperature and instrumental error.

SOURCES OF INFORMATION COMPRISED IN THE SYNOPTICAL TABLE OF MEAN TEMPERATURE OF THE AIR.

The means at the following stations are copied from the Synoptical Table, Appendix I, 1879, page 25.

Ala River, Siberia.
Anadyr River mouth, Eastern Siberia.
Duë Light-house, Sakhalin Island.
Fort Franklin, Hudson Bay Territory.
Fort Kenai, Cook's Inlet, Alaska.
Fort Tongass, Alaska.
Fort Wrangell, Alaska.
Fort Yukon, Alaska.
Hakodadi, Japan.
Ikogmut, Yukon River, Alaska.
Kolmakoff Redoubt, Kuskokwim River, Alaska.
Kusunai, Sakhalin Island.
Möller Islands, Port Möller, Aliaska Peninsula, Alaska.
Muravieff Post, Sakhalin Island.
New Westminster, British Columbia.
Nulato, Yukon River, Alaska.
Port Clarence, Bering Strait, Alaska.
Portland, Oregon.
St. Paul Island, Pribiloff Islands, Bering Sea.
Sitka, Alaska.
Unalaklik, Norton Sound, Alaska.

P. C. P.—35

NOTES ON THE PRECEDING TABLES—Continued.

Those at the following stations are from observations subsequently received.

Aian, Okhotsk Sea, Siberia.
Atka Island, (Nazan Bay,) Aleutians.
Attu Island, at Chichagoff Harbor, Aleutians.
Bering Island, Bering Sea.
Fort Alexander, Nushagak River, Alaska.
Hazelton, Forks of the Skeena River, British Columbia.
Nikolaieffsk, Amur River, Siberia.
North Foreland, Cook's Inlet, Alaska.
Okhotsk, Eastern Siberia.
Petropavlovsk, Kamchatka.
Pitlekai, Eastern Siberia, Arctic Coast.
Point Barrow, Alaska.
Port Graham, Cook's Inlet, Alaska.
Port Providence, Plover Bay, Eastern Siberia.
Port Simpson, British Columbia.
Queen Charlotte Islands, British Columbia.
St. Paul, Kadiak Island, Alaska.

Those at the following stations are derived from the combination of the means in Synoptical Table, Appendix I, 1879, page 25, with those at corresponding stations subsequently received, each having weight according to the number of months represented.

Iliuliuk, Unalashka Island, Aleutians.
Kotzebue Sound, (Choris Peninsula or its vicinity,) Alaska.
St. Michael's, Norton Sound, Alaska.
Udsk Village, Udi River, Siberia.

It is uncertain whether the observations at Ala River, Siberia, are *new* or *old style*. Figures in black-faced type denote that the series was incomplete.

The degrees are of Fahrenheit scale. When no sign is affixed they are to be taken as above zero.

SOURCES OF INFORMATION CONTAINED IN THE SYNOPTICAL TABLE OF THE TEMPERATURE OF SURFACE SEA WATER.

All the temperatures in this table are copied from the Synoptical Table, Appendix I, 1879, page 26, except those at Queen Charlotte Islands and Sitka, which are taken from observations at those localities subsequently received.

The observations are chiefly contained in the records of the U. S. Coast and Geodetic Survey parties in Alaska, 1871–1880, taken with standard instruments graduated to Fahrenheit's scale.

The values in brackets are interpolated, or for incomplete months completed by interpolation.

SOURCES OF INFORMATION COMPRISED IN THE SYNOPTICAL TABLE OF MEAN PRECIPITATION.

The amounts given opposite the following stations were copied from the Synoptical Table of mean Precipitation contained in Appendix I, 1879, page 26.

Aian, Okhotsk Sea, Siberia.
Burnaby Island, Queen Charlotte Islands, British Columbia.
Fort Kenai, Cook's Inlet, Alaska.
Fort Tongass, Alaska.
Fort Wrangell, Alaska.
Hakodadi, Japan.
Nikolaieffsk, Amur River, Siberia.
Nulato, Yukon River, Alaska.
Okhotsk, Eastern Siberia.
Petropavlovsk, Kamchatka.
St. Michael's, Norton Sound, Alaska.
St. Paul Island, Pribiloff Islands, Bering Sea.
St. Paul, Kadiak Island, Alaska.
Sitka, Alaska.

Those at the following stations are taken from observations subsequently received from the U. S. Signal Service.

Atka Island, (Nazan Bay,) Aleutians.
Attu Island, at Chichagoff Harbor, Aleutians.
Bering Island, Bering Sea.
Fort Alexander, Nushagak River, Alaska.

NOTES ON THE PRECEDING TABLES—Continued.

The amounts opposite Iliuliuk, Unalashka Island, Aleutians, are taken from recent observation, of the U. S. Signal Service except those for June and July, which are copied from Synoptical Table Appendix I, 1879, page 26.

The amounts are of rain and melted snow, given in English inches.

Figures in black-faced type denote that the series was incomplete.

SOURCES OF INFORMATION CONTAINED IN SYNOPTICAL TABLE OF PREVAILING DIRECTIONS OF WIND.

The directions at the following stations are copied from the Synoptical Table, Appendix I, 1879, page 27.

Aian, Okhotsk Sea, Eastern Siberia.
Anadyr River mouth, Eastern Siberia.
Duë Light-house, Sakhalin Island.
Fort Kenai, Cook's Inlet, Alaska.
Fort Tongass, Alaska.
Fort Wrangell, Alaska.
Ikogmut, Yukon River, Alaska.
Iliuliuk, Unalashka Island, Aleutians.
Kusunai, Sakhalin Island.
Muravieff Post, Sakhalin Island.
Nikolaieffsk, Amur River, Siberia.
Nulato, Yukon River, Alaska.
Okhotsk, Eastern Siberia.
Petropavlovsk, Kamchatka.
St. Michael's, Norton Sound, Alaska.
St. Paul Island, Pribiloff Islands, Bering Sea.
St. Paul, Kadiak Island, Alaska.
Sitka, Alaska.

Those at the following stations are taken from later observations.

Atka Island, (Nazan Bay,) Aleutians.
Attu Island, at Chichagoff Harbor, Aleutians.
North Foreland, Cook's Inlet, Alaska.
Port Simpson, British Columbia.
Queen Charlotte Islands, British Columbia.

Letters in italics indicate that the series was incomplete.

The directions in most cases are known to be *true* and believed to be so in all, though in some cases the source of information does not specifically state whether the observations are *true* or by *compass*. The new observations are taken directly from the tables without being reduced to a mean direction.

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ADDENDA AND ERRATA.

The reader is requested to make these changes with pen and ink.

Page 3. The first three words of line 22 from top have dropped from the beginning of the line above.

Page 4. Seymour Narrows. For amended establishment and depth of water on the reef, received too late for insertion in the text, see chart of Seymour Narrows.

Page 77. Line 19 from top: *for* "sixteen cables" *read* "sixteen fathoms."

Page 99. Line 9 from top: *omit the word* "eastern," *and after* "Noyes Island" *add* "and Baker Island."

Page 143. Line 26 from top: *for* "Beardsley" *read* "Beardslee."

Page 155. Line 24 from top: *for* "Pribieli" *read* "Pribilic."

Page 158. Line 15 from top: *for* "Khlebnikoff" *read* "Khliebnikoff."

DANGERS IN DIXON ENTRANCE AND VICINITY.

The observations of Lieut. Com. H. E. Nichols, U. S. N., Assistant Coast and Geodetic Survey, during 1883, have been received since the text was printed. Several important additions to the knowledge of that region are comprised in the report, which has not yet received final revision but covers the region from the entrance of Portland Inlet to Point Vallenar, including the whole of Revillagigedo Channel and the Gravina Group with their intersecting passages. Some of these facts are of sufficient importance to be indicated here in advance of their final revision and official announcement.

Gravina Islands.—The eastern shores of Duke and Annette islands were shown by the work of 1882 to be considerably farther west than the charts had up to that time indicated. Their western shores have now been shown to partake of the same old error, and to require a similar correction. Point Percy and Point Davison are situated, the former a mile and two-thirds **S SW.**, and the latter a somewhat greater distance **S.** and **W.** from their position on the older charts as shown on the chart of Dixon Entrance in this volume. A similar change will be required to correct the position of Cape Northumberland and the adjacent shores and islets.

Tamgas Harbor.—The depth of water in this harbor appears by this investigation to be only about half what is called for by the Russian survey; that is to say, five or six fathoms at the anchorage instead of ten or twelve.

Point Davison.—Besides the above-mentioned difference of position, the *reef* or *shoal* off this point is less extensive than formerly supposed.

Hassler Reef?—June 6, 1883, Lieut. Com. Nichols came upon a bed of growing kelp in Clarence Strait in about

Latitude ---------- **54° 52′.5 N.**
Longitude ---------- **131° 31′ W.,**

doubtless containing dangerous rocks. A sounding near it gave ten fathoms, rocky bottom. In this position Mount Tamgas bore **N. ⅛ E.**, Mount St. Lazaro **NE. ⅞ E.**, and the southern part of Point Percy about **N. ¼ W.**, four miles distant. The high land on the south part of Dundas Island showed well to the westward of the westernmost bare rock. This danger may be the *Brundige Rocks*, though considerably north of Brundige's position for them. In consequence of the doubt both are indicated on the accompanying chart of Dixon Entrance.

Devil Rock.—The name having been retained for the danger north and west of Zayas Island in the text, (page 56), and another danger, determined approximately by Capt. James Carroll, commanding the steamer *Idaho*, November 23, 1883, being also referred to on some charts as *Devil Rock*, the former has been placed on the accompanying chart of Dixon Entrance as *East Devil Rock* and the latter as *West Devil Rock*. According to Captain Carroll's observations, (which were taken in very rough weather, with the vessel rolling badly, and hence may not be very precise,) when the rock or reef bore **S. 42° W.** one and a half miles, Mount St. Lazaro bore **N. 7° E.**, Harry Saddle **N. 51° E.**, and the south extreme of Cape Chacon **S. 73° W.** At this time the ship's head was **S. 48° E.** and the deviation on that bearing was **5° W.** Platting *West Devil Rock* by the three-point method, it would be situated approximately in

Latitude ---------- **54° 41′.5 N.**
Longitude ---------- **131° 27′.5 W.**

Chacon Breaker.—Captain Carroll, with the *Idaho*, April 13, 1883, sighted *a breaker* about **SE. ¼ E.** seven miles off Cape Chacon and about four miles from the vessel.

Nuñez Reefs.—A little later on the same day Captain Carroll reports the Nuñez Reef as two miles on his port beam, which would place it about **S. by E. ¼ E.** six miles from Cape Chacon, considerably southward of its supposed position. Unverified reports are current among the navigators of this region to the effect that there is *another breaker* about three miles **S. by W.** from Point Nuñez.

Mount St. Lazaro.—According to Nichols' observations (subject to final revision) the position of this peak is about

Latitude	**54° 53′.5 N.**
Longitude	**131° 15′.0 W.**

Chilkoot Portage.—A note from Captain James C. Carroll in regard to the earliest transit of the Lewis River and this portage by white men, states that the first authentic passage over this route was performed about 1864 or 1865 by an employé of the Hudson Bay Company, who started from Fort Selkirk and was delivered by the Chilkoot Indians to Captain Swanson, then in command of one of the company's steamers and for whom the anchorage under Point Couverden was named, (page 193.) It was from reports of this exploration doubtless that information as to the existence and approximate location of Lake Lebarge was derived and communicated in 1866 to the Telegraph Expedition explorers by the servants of the Hudson Bay Company.

In a report to the Commissioner of Lands and Works of British Columbia, dated February 15, 1880, John McKenzie recounts explorations of the previous season, made by himself and Alexander McLellan in the country between Dease Lake and the Lewis River. He quotes a large part of the Report of George Holt, by which it appears that that explorer first crossed the Chilkoot Portage June 1, 1872, and descended as far as the northern end of Lake Marsh, returning October 18th. He heard the story of the burning of Fort Selkirk from the Indians who were friendly. Holt made several subsequent journeys.

Captain Carroll also states that George Holt (see page 200) crossed the Chilkoot Pass in 1874, and went down the Yukon to about longitude **160° W.**, where he crossed the portage to the Kuskokwim, which he descended to the sea. Of the members of the expedition of 1880, some descended the Yukon to Fort Yukon, others went up the Pelly River to **Fort Pelly-banks.** Here they divided again, some going to the Pelly Lakes, others to **Fort Frances** and **Frances Lake,** where they met other prospectors who had come up by the way of the Stikine River and over the Blue Mountains to the Dease Lake country. In 1883 a party of ten prospectors wintered on the Copper River exploring for minerals.

A letter from Commander J. B. Coghlan, U. S. N., commanding U. S. S. *Adams,* at Sitka, Alaska, dated April 15, 1884, contains the following information:

Dangers near the Kane Islets, Neva Strait. (See page 157.)—A ledge of rocks extends eastward of the channel between the Kane Islets and the Baranoff shore, about a cable off the Baranoff shore and bearing about NW. ½ W. from the islets. The ledge is about two cables in length, with two always dry lumps above water. It is bold-to.

Eureka Rock, Peril Strait.—An unsuccessful attempt was made to locate *Eureka Rock* at slack water. It appears that the shoal water extends nearer to the Chichagoff shore than previous information denoted, and that, to avoid it, the navigator should, when half way from Liesnoi Island toward Poroga Island, keep the Chichagoff shore aboard distant less than one hundred, instead of three hundred yards as stated in the directions on page 162 of this volume.

Schulze Cove, Fish Bay.—According to Commander Coghlan, this cove is identical with the cove indicated by Tebienkoff and described on page 161 of this volume, and the position assigned to Schulze Cove on U. S. Hydrographic Office charts 225 and 883 is erroneous. With the exception of the relative position the description on page 161 is correct. The head of the cove is separated by an isthmus fifty feet high and only about four hundred yards wide from Peril Strait, NE. from Poroga Island.

Haley Anchorage.—A small anchorage on the opposite side of Fish Bay was discovered by a local pilot named Haley and examined by the officers of the *Adams.* It lies about south from Schulze Cove and is protected by a small point at the eastward. It has from six to twenty fathoms water over a bottom of mud and shell but is quite small in extent. (Page 161.)

Anchorage at the head of Fish Bay.—The head of Fish Bay to the eastward, seems to shoal up gradually to a bank, dry at low water, caused by several good-sized streams which come in here. From the edge of the bank westward there is anchorage in five to twenty fathoms clear across the head of the bay, with a width east and west of two or three cables. This discovery is also due to the officers of the Adams. (Page 161.)

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*Galiano (Don Dionisio Alcala). Relacion de viage hecho por las goletas Sutil y Mexicana en el año de 1792 (etc.), [anonymous] 8°, and atlas folio. Madrid, imprenta real, 1802. The atlas only has been indexed; the figures refer to the numbers of the charts.

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UNITED STATES COAST AND GEODETIC SURVEY.

NOTICE TO MARINERS.

No. 60.

PACIFIC COAST.

SAILING DIRECTIONS FOR WRANGELL STRAIT, ALASKA.

The following sailing directions have been compiled from notes and records of a reconnaissance in Alaska made by Commander J. B. Coghlan, U. S. N., commanding the U. S. steamer *Adams*, and is published in connection with Chart No. 714, issued in February, 1885:

When going North: From a point one-quarter to one-half mile to the westward of Point Alexander steer for Point Deception, passing to the westward of Midway Rock.

Midway Rock may be passed on either hand; but as nothing is gained by going to the eastward, and as deep water and clear ground was found to the westward, that channel is recommended.

When abreast this rock, take a mid-channel course and keep it until well up to Battery Islets, which may be passed on either hand. If passing to the westward, keep in mid-channel. If passing to the eastward, keep close to the main shore, as shoals make off from the southern and middle parts of the Islets extending towards the main shore, thereby contracting the channel.

After passing Battery Islets keep in mid-channel until "No Thoroughfare" Point is abeam, when vessels may take the channel on either side of Spike Rock. The eastern channel carries the deeper water, but is not so direct as the western one. Spike Rock is now marked by two red and black horizontal-striped buoys—a 3d-class can south, and a spar buoy north of it. To pass to westward of the rock, keep point Lockwood, just open of Hicks Point, *astern;* this leads clear of the rock. To pass to the eastward, keep the eastern shore *close* aboard until the south end of Keene Island is almost abeam, then haul sharp out into mid-channel to avoid a ledge covered at half-tide which makes out from the eastern shore abreast of the island, (and at present marked by a beacon.) In either case, when in mid-channel, change course to the northward, passing to the eastward of Burnt Islet and the ledge (at present marked by a beacon) extending from its southern end, giving preference to the Burnt Islet side of the channel until the islet is abeam. Then continue nearly in mid-channel, slightly favoring the western shore. The tidal currents are strong in this locality, and great caution must be used to prevent the vessel from shearing.

About half-way from Burnt Islet to Spruce Point, *South Ledge* (at present marked by a beacon) makes well off from the eastern shore. This is a very dangerous ledge, as it covers at half-tide and gives no sign of its presence. A large boulder also lies just awash at very high tide to the northward of the ledge.

After passing South Ledge, steer for Grass Knoll of Bush Top Islet (now marked by a beacon) just open of the black nun buoy marking the turning point on the western side of the channel. Opposite to this black buoy near the eastern shore, with its outer limit marked by a *red* spar buoy, is the very dangerous reef known as *North Ledge.* This ledge covers at about one-third tide, and no sign of it then exists to warn one of the danger.

Passing between the buoys, keep about 25 yards from the black buoy, turning to a mid-channel course between Bush Top Islet and Spruce Point. When Bush Top beacon is abeam, steer so as to keep Anchor Point beacon a little open on the port bow. The tidal currents in this vicinity are strong, sometimes attaining a velocity of six knots per hour; great caution is therefore necessary to prevent the vessel from shearing, particularly towards the black buoy.

Pass from 100 to 150 yards from Anchor Point and steer for the black buoy which marks the turn at Blind Passage Point. From Anchor Point a beacon on the shore a little north of Blind Passage Point may be seen to the right of the buoy.

A line joining the above beacon and the one on Anchor Point is a guide to clear the shoal ground of the "California" Boulder Patch.

When up to the black buoy, change the course gradually to the westward until Island Point is seen between the red buoy off Danger Point and the black buoy off Vexation Point; steer so as to pass between the buoys on this bearing. Vexation Point Rock sometimes covers and is now marked by a beacon.

A line from the southern extremity of Blind Passage Point to Island Point clears Danger Rock.

The 2d-class black nun buoy, in apparent mid-channel just off Vexation Point Rock, marks "Danger Rock," the most dangerous rock in the strait. It is a pinnacle rock about six feet by three, with deep water close-to, and is just awash at the lowest low tide. A line between the buoys, on with Island Point ahead and southern extremity of Blind Passage Point astern, clears the foul ground on either side. When up to Island Point, haul out around GreenRocks, passing close to them, and keep the course parallel to their trend to avoid ledges extending from the eastern shore; these ledges are now marked by beacons.

The Southern Green Rock is always uncovered, although at the highest tides there is only about six feet square out of water. The Northern Green Rock covers at high spring-tides. Both these are now marked with beacons, as a guide when running through the Mud Flat channel.

After passing the Green Rocks, favor the western shore, as quite a long shoal makes off from Rock Point, and steer for the *red* spar buoy at the south end of Mud Flat channel. Pass about 15 yards southeastward from the red spar buoy and steer for the centre of Green Point. This brings the middle of Green Rocks right astern. Keep the red nun buoy off the western end of the North Flat open to the eastward of Green Point, leaving it about 15 yards on the starboard hand in turning for the black buoy abreast Green Point; keep on the line of the two buoys until near the latter and pass it close-to on the port hand, taking a mid-channel course to Blunt Point past Mountain Point. From Blunt Point keep a mid-channel course until well up to the beacon on Beacon Point. In this part of Wrangell Strait preference should be given the eastern shore, to avoid the ledges on which the beacon is placed. When the entrance of the Strait is well open, change the course to pass close to the large black buoy near the western shore, and then for the small black buoy near Ledge Point beacon. At this latter buoy haul sharp out with helm nearly hard aport, to head (about N. E.) well to the right of the point on the opposite shore until the beacon is abeam, when the vessel should be about in mid-channel; then take a mid-channel course (about N. N. E.) out of the Strait.

Going South: If the Prolewy Rock at the mouth of the Strait is covered, vessels drawing 20 feet can take a fair mid-channel course up to the Mud Flat buoy abreast of Green Point. If the rock is uncovered, or at low tide, anything drawing 15 feet or more must follow the above directions.

Vessels drawing 9 feet and over should not attempt the passage of Wrangell Strait except on a rising tide. Strangers are recommended to take the service of a pilot.

Mariners are cautioned not to place too much dependence on the positions of buoys and beacons, as the strong currents, ice and drift-wood are liable to move them out of position or carry them away.

The buoys are placed for vessels going north.

J. E. Hilgard,
Superintendent.

COAST AND GEODETIC SURVEY OFFICE,
Washington, D. C., March 23, 1885.

☞ *This Notice affects Coast and Geodetic Survey Charts* 701, 714, *and pages* 113, 114, 115, 116, *and* 117, *Pacific Coast Pilot, Alaska, Part* 1, *Dixon entrance to Yakutat Bay, Second Series,* 1883.

UNITED STATES COAST AND GEODETIC SURVEY.

NOTICE TO MARINERS.

No. 61.

PACIFIC COAST.

SAILING DIRECTIONS FOR INLAND PASSAGE BETWEEN SITKA HARBOR AND HOONIAH SOUND, THROUGH OLGA STRAIT, NEVA STRAIT, AND PERIL STRAITS, ALASKA.

The following sailing directions have been compiled from notes and records of a reconnaissance in Alaska, 1884, made by Commander J. B. Coghlan, U. S. N., commanding the U. S. steamer *Adams*, and is published in connection with Chart No. 727, issued in June, 1885:

When going North from Sitka: From Harbor Rock steer for the spar buoy, painted black and white in perpendicular stripes, at the northwest end of Sitka Harbor, passing it close-to on either hand, and continue on this course until the Channel Rock beacon is in line with the middle of the north end of Japonski Island, then change the course so as to pass midway between the main shore and the Kasiana Islets.

When these islets are abeam, steer for the middle of the space between Little Gavanski and Middle Islands, until the northernmost of the Old Sitka Rocks is on the starboard beam; then change course to the eastward, passing about one-third of a mile from the southern face of Big Gavanski Island. When the eastern end of that island is abeam, make a gradual turn to the northward, keeping in mid-channel up to Olga Strait.

A passage exists to the eastward of the Old Sitka Rocks, but nothing is gained by using it unless the port of destination is Old Sitka Harbor.

Continue in mid-channel through Olga Strait. About midway in this strait a kelp patch is exposed at slack-water, making across the surface, but a set of soundings over the patch failed to develop less than 4½ fathoms at extreme low tide.

At Creek Point the tide races quite strong, requiring careful steering.

When passing from Olga to Neva Strait across the northern entrance to Nakwasina Passage, keep the vessel on a line between the projecting point at the west end of Halleck Island and the little island off the southeast end of Partoffs-chikoff Island; this leads clear of the rocks off Neva Point, Baranoff Island. When Neva Strait is well open, head for Whitestone Islet until well up with it; then pass to the eastward of that islet and up the Narrows, steering about midway between the line of Whitestone Islet and the black buoy on one hand and Whitestone Point on the other. Keep on this course until well up to the black (can) buoy, then pass between it and the spar buoy on the end of the spit which makes off the eastern shore.

The turn between the buoys being sharp, it is recommended that vessels slow-down as they pass the Whitestone Islet going north, or the spar buoy when coming south. After passing the Narrows, keep near to the western shore, on account of foul ground along the opposite side.

Pass close to High-water Islet, near the northern end of the strait, to avoid a sunken patch with 2½ fathoms over it at low water, lying about 250 yards S. W. by W. ½ W. (mag.) from the centre of the islet. Continue in mid-channel until well past Entrance Island, off Point Zeal. To enter St. John Baptist Bay, open it well and steer for the middle of the narrow arm at its head, where fair anchorage may be had in 15 to 16 fathoms. The winds here are very irregular, coming in heavy gusts from the different gulches, and vessels are constantly swinging. Westerly winds blow home. With northerly winds, the gusts are so strong that the *Adams* was forced to moor to get sufficient chain out to prevent dragging.

If bound to the northward, take a mid-channel course, passing between the Kane Islets and the main shore. Keep this course until Scraggy Island is on the quarter, then turn gradually to the northward into Peril Straits, keeping well over to the western shore to avoid reefs and rocks off the eastern shore.

In that part of Peril Straits connecting Fish Bay and Salisbury Sound strong tide-swirls are encountered, and often, at change of tide, a four-feet tide-bore may be met. Great caution must therefore be used to prevent the vessel from sheering. It is stated in "The Alaska Coast Pilot," page 161, that the channel leads on either side of the Channel Islets; the officers of the *Adams*, however, find but one, and state that the *only* channel is to the northwest of them.

When past the Channel Islets, change course to pass close to Suloia Point, skirting the headland at a distance of about 100 yards until abreast of that point. If bound for Schulze Cove, steer direct for Schulze Head from Suloia Point; if bound through Peril Straits, skirt the headland and stand on for Sergius Point.

The principal danger on the route is the heavy race and tide-swirls through Peril Straits into Fish Bay, which demand from the navigator the greatest caution and watchfulness.

To enter Schulze Cove, continue as above directed and round Schulze Head, passing midway between that Head and Piper Island, and anchor about the middle of the cove in from 14 to 16 fathoms, muddy bottom. Small craft anchor close in under Piper Island in shoaler water. The passage to the eastward of Piper Island may be used, but the western one is better. Coming out of the cove, and bound either north or south, run direct for the middle of Suloia Point Headland until well up to it before attempting to steer for either Salisbury Sound or Sergius Channel, as several kelp patches show along the southern side of Fish Bay. (Want of time prevented a thorough examination of these patches, and only enough was learned to make it proper to advise an avoidance of them.)

If bound north through Peril Straits, skirt Suloia Point Headland until the northern part is abeam; then bring the beacon on Sergius Point ahead and the extremity of Suloia Point astern; this also brings the beacon on Range Point almost astern. Keep on this line, which leads between the Francis Rocks, until well over towards Sergius Point. When the Prolewy Rock off Rapids Island is nearly abeam, which will bring a vessel about 200 yards off Sergius Point, steer to pass within 60 yards from the Chicagoff Island shore from Sergius Point to Shoal Point. When the Prolewy Rock bears against the middle of the north face of Rapids Island, all danger of Wayanda or Eureka Ledge will be passed, and the course can be changed for the eastern shore of the straits, heading for a land-slide or bare spot on the cliff of Mountain Head. A line from this bare spot to the small cove on the south side of Shoal Point clears Liesnoi Shoal.

As the flood-tide runs strong to the northward, it is necessary to steer thus well to the southward of the shoal. When close up to the Mountain Head shore, stand to the northward, steering to pass about midway between Little Island and Bear Bay Island, with Middle Point a little open on the port bow, until a little past the eastern entrance to Deep Bay. This will bring the islet off the eastern end of Big Island, almost abeam, and the vessel will be on the line joining the southwest head of Bear Bay Island and Arthur Point. Steer on this line towards Arthur Point until Middle Point is a little abaft the beam; then make a gradual turn to the northward to Pass Yellow Point, keeping in mid-channel between that and Rapids Point.

The line of Bear Bay Island (Southwest Head) on with Arthur Point leads clear of a very dangerous rock, which shows at low water, lying about 200 yards west of Middle Point. A spar buoy, painted *red*, now marks this rock, but the current is so strong that the buoy is liable at any time to break adrift. At slack-water the whole ledge, of which the above rock is a pinnacle, is marked by kelp which disappears as soon as the tide makes.

When passing through the reach between Yellow Point and Rapids Point, keep nearly in mid-channel, giving the preference, if any, to the Rapids Point shore, and steer for the northern bluff or bank of Range Creek, opposite Big Rose Island.

The Opasni Islets may be passed on either side, but on account of the easier turns, wider channel, and deeper water, the eastern or *Adams* channel is recommended.

To use Rose channel, make a sharp turn around Rapids Point and keep close to the shore of that point, passing inside of all islands, islets, and rocks until past the Rose Channel Rock; then gradually haul out to mid-channel and up the next reach.

To use Adams channel, stand on for Range Creek bank or bluff until the southeast end of Big Rose Island is abeam; then haul gradually to the northward around that island, keeping off about one-third the distance from the island to the eastern shore. This clears the shoal ground on the eastern and a rock on the western shore. This rock shows at low water, and is about 125 yards off the eastern side of Big Rose Island. It is marked by kelp at high-

water slack, but the kelp disappears as soon as the tide begins to ebb or flood. From this rock the south edge of Big Rose Island is just on with Rapids Point.

When up to the northern end of Big Rose Island, haul sharp over to the middle of the channel, to avoid shoal ground making off from a creek on the eastern shore, a half mile north of the islands. The water is bold to and the shoal may be seen in time to avoid it. After passing the shoal, keep a mid-channel course up the reach.

Very careful steering is required between Suloia Point and the Opasni Islets, as tide-swirls sometimes take charge of the vessel, and the force of the tides is such as to carry under all kelp and even ordinary thirty-feet spar buoys.

Passing out of the Upper (northern) Rapids by either Adams or Rose channels, take a mid-channel course and keep it until Poverotni Island is abeam; then steer for Otstoia Island, passing to the eastward of it, running close-to and leaving the *red* buoy on the starboard hand.

The channel is only about 200 yards wide, and is on the Otstoia Island side.

Having passed this island, steer a course parallel with the Nismeni Point shore line, heading for the easterly of two big land-slides on mountains on the northern shore until Broad Island is almost abeam; then bear up to the eastward for False Linderberg Head.

In going South: From False Linderberg Head, stand for Broad Island until Otstoia, Krugloi, and Elovoi Islets appear to lie just equidistant from each other; Broad Island will then be broad on the starboard bow; then steer for the N. E. point of Otstoia Island, with a land-slide on a mountain on the north shore just astern until well up to the point.

In running through the passage between Otstoia and Baranoff Islands, keep close to the Otstoia shore to avoid a large shoal, which dries at low water and makes off from the creeks opposite the island, filling three-fourths of the apparent channel.

When clear of Otstoia Island, steer for Poverotni Island, and thence in mid-channel down to Upper (northern) Rapids. Favorite Anchorage in Deadman's Reach, about one mile south of Otstoia Island, is a good anchorage, but a vessel should not anchor inside of the 15-fathom curve. Cozian Rock and Shoal, just to the northward of Otstoia Island, are very dangerous to vessels attempting to use the old Russian steamer track, several vessels having struck on the shoal. By keeping to the eastward of a line joining the eastern faces of Broad and Otstoia Islands the shoal may be avoided.

Range Point, in Peril Straits, is very distinct, although much lower than the land just back of it. It is the centre point of a headland of a small bay at the entrance to Fish Bay, and is now marked by a large bare spot on the cliff, where all vegetation was cleared away in the summer of 1884.

The beacon on Sergius Point is nearly on the line joining Range Point and Suloia Point.

The Francis Rocks, at the southern end of Sergius Channel, were developed by the *Adams*, and named by Commander Coghlan, in honor of Pilot E. H. Francis, who was the first person to get soundings on them.

The following are the bearings from West Francis Rock:

Midway Rock, N. N. E. ½ E.

Rapids Island, (N. edge,) E. N. E.

Rapids Island, (S. edge,) E. ½ N.

The following are the bearings from East Francis Rock:

Liesnoi Island, (W. edge,) N. by E. ¼ E.

Little Rapids Island. E. ¾ N.

West Francis Rock has about *seven* feet over the shoalest part at mean low water, and is about 30 by 60 yards in extent, with deep water on all sides.

East Francis Rock, which appears to be directly in the channel from Point Suloia to Sergius Point, has about *six* feet over it at mean low water, and is of quite small extent.

Wayanda or Eureka Ledge is not a pinnacle rock, but consists of a very evenly-curved patch or shoal about 100 by 200 yards in extent, the shoalest part of which has about *six* feet of water upon it at mean low water. This shoal part is about 15 yards square.

Prolewy Rock is always uncovered, and is the only pinnacle near. The ledge is very abrupt and falls off from 3½ to 6 and 8 fathoms in a boat's length; consequently, on the southern side where the northerly set of the current first strikes it, the water boils up and is violently agitated.

The tides at the Southern Rapids, in Peril Straits, are peculiar. The current at flood tide runs *north* for four hours, and *south* for an hour and a half, with an intervening half hour of slack-water. There is no slack in the current at the turn of the tide, but it steadily runs south for about six hours; during the first two of which the tide rises, and during the last four of which it falls.

A half hour's slack-water then follows, after which the current turns and runs to the north for about six hours; during the first two of which the water falls, and the last four rises. The time of *slack* (but *not* high or low) water at the Lower (southern) Rapids is about two hours before high or low water at Sitka. At spring-tides, however, slack-water occurs 2½ hours earlier than high or low water at Sitka.

Vessels should not attempt to pass the Lower Rapids except at high-water slack, or between that time and high water. Never attempt the Rapids against the tide.

If caught between the Upper and Lower Rapids, a temporary anchorage may be had in Bear Bay in from 16 to 24 fathoms water. The tidal current in this bay is very slight, even when 200 yards out the current may be running five to eight knots.

It is not a harbor in which a vessel can ride out a gale, or even the strong winter winds, as it is contracted and the holding-ground bad.

To anchor in Bear Bay, stand in, in mid-channel, stopping when abreast of the quartz island, with which Point Siroi terminates, and anchor just before the northeasterly face of Big Island comes on with the southwest point of Bear Bay Island. This gives swinging room in from 13 to 16 fathoms. On the southern side and about half way up this bay is a ledge of rocks which uncovers at low water. It is to avoid swinging onto this ledge that anchorage is recommended on the line above given.

Deep Bay, on the opposite side of the straits, is an excellent harbor. To enter it, take the channel to the southward of Big Island, and keep to the Big Island side, passing, when abreast of Grass Top Rock, one-third the distance from Big Island to that rock. At two-thirds that distance lies a sunken rock, which uncovers at low water, right abreast of Grass Top, and it is to avoid this rock that vesselss hould keep close to the Big Island shore. The passage between Grass Top Rock and Little Island is nearly closed by a ledge, bare at low water, and should be avoided.

Deep Bay may be reached by a channel to the northward of Big Island, but as this channel is obstructed by foul ground it is not recommended except for very small craft. When inside the bay, and well past the western end of Big Island, anchorage may be had anywhere in mid-channel, in from 11 to 15 fathoms, according to the distance in. At low water, an extensive flat uncovers to a distance of a mile from the head of the bay; the anchorage is about 1¼ miles long by one-half mile wide.

Launch Cove.—Behind Cove Head (the northeast point of Pinta Head) is a very good anchorage for very small craft.

Suloia Bay.—Suloia Bay is not fit for an anchorage, as the water is very deep, 23 to 35 fathoms, and the bottom rocky. Fishing-smacks and launches may find temporary anchorage at its head, but large vessels should use either Schulze Cove or Haley Anchorage.

The whole country about Peril Straits is heavily wooded. Piper, Rapids, Liesnoi, Little, Big, Bear Bay, Little Rose, and Big Rose Islands are all covered with dense woods reaching to high-water mark. Prolewy and Midway Rocks are bare; so, also, is the rock off the east end of Big Island, except for one or two small trees.

The passage of Peril Straits is difficult and very dangerous, and should not be attempted the first time without the aid of a pilot. Small vessels by following the above directions may run the rapids.

In 1884 there were four buoys to mark the dangers in the lower part of Peril Straits.

Beginning at the South:

1st. A 2d-class can buoy (red) in 5½ fathoms water, marking the East Francis Rock.

2d. A spar buoy (black) in 4½ fathoms water, marking the West Francis Rock.

3d. A spar buoy (red) in 3 fathoms water, marking Eureka Ledge.

4th. A spar buoy (red) in 5 fathoms water, marking the dangerous rock off Middle Point.

The last-named buoy and the one on Eureka Ledge are visible at all stages of the tide. Those on the Francis Rocks are visible during the northerly run of the tides, and sometimes during the southerly run, except during the last hour.

J. E. Hilgard,
Superintendent.

COAST AND GEODETIC SURVEY OFFICE,
Washington, D. C., June 12, 1885.

☞ *This Notice affects Coast and Geodetic Survey Charts* 701, 725, *and pages* 152, 153, 156, 157, 160, 161, 162, 163, 164, *and* 165, *Pacific Coast Pilot, Alaska, Part* 1, *Dixon entrance to Yakutat Bay Second Series*, 1883.

All bearings are magnetic, all distances in nautical miles, and all depths at low water.