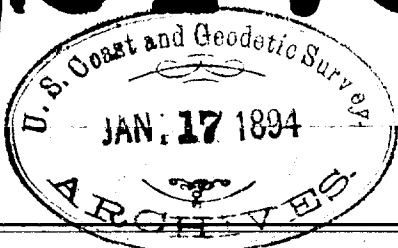


83.
SHA
2170
1893

2170



Diag. Cht. No. 6102-1

U. S. COAST AND GEODETIC SURVEY.

T. C. Mendenhall, Superintendent.

State: *Washington.*

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 2170.

LOCALITY:

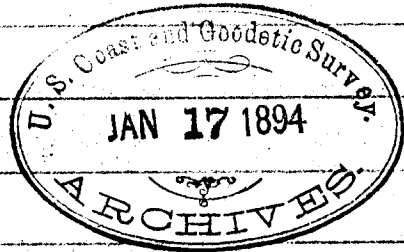
*Strait of
Juan de Fuca.*

1893.

CHIEF OF PARTY:

Lieut. Lucien Flynne, U.S.N.

2170



Descriptive Report.

Section XI.

Hydrographic Sheets Nos. 1, 2 and 3.

Strait of Juan de Fuca.

C. & G. Murray Str. "Gedney".

Lieut. Lucian Flynn, U.S.N., Comd'g.

1890.

1.

The sheets are respectively sheets #1, #1^a, #2 (tracing) and #3 (tracing), all pertaining to Strait of Juan de Fuca. Sheet #1 which comprises the Strait of Juan de Fuca from Pillar Point to the Ocean, scale $\frac{1}{80000}$, was supplied by the Office.

Sheet #1^a on scale of $\frac{1}{10000}$ was prepared by this party. Sheets #2 and #3, which are tracings, were supplied by the Office for the investigation of reported dangers in the Strait off Middle Point and Point Wilson, Wash., and in vicinity of Duncan Rock.

Statistics are appended to this report on Form 11.

The triangulation signals shown on sheets #1 and #1^a were plotted from data furnished during the season by Mr. Gilbert, a copy of which is herewith forwarded, excepting ^o mass which, with the hydrographic signals, was determined by this party.

The shore line on both sheets to Eastward of Waaddah Islands was run in by this party, the topography of this portion of the Washington shore not having been done by a regular

1.

party. Attention is called to the difference between this shore line as found, and that furnished with the projection.

2.

The locality of the survey proper is between Pillar Point and Waaddah Island, Wash.

Although the ship's lines of soundings extended across the strait to the Vancouver Island shore, special examination was directed only to the Washington shore.

The Coast between the limits above is high and bold, and thickly wooded.

The only indentation in the shore line of importance is Clallam Bay, the special examination of which is comprised in sheet # 1^a. Several small streams empty into the strait within these limits, the principal being Clallam River, which empties into Clallam Bay, at Western edge of the town of East Clallam. It has a bar at its mouth, dry at low water. The stream is only suitable for very small boats or rafts.

2.

Clallam Bay affords fair anchorage and moderate protection for vessels in SE^{ly} and SW^{ly} gales; the usual ones in winter, and the most severe. Westerly and NW^{ly} gales create a heavy swell in the Strait, and this finds its way readily into the Bay, especially the Eastern part of it, rendering anchorage very uncomfortable, unless riding end on to the swell. In the Western part of the Bay, close under Sequon Pt., a quieter anchorage may be found, but the holding ground is inferior to the other anchorage, and large vessels would be safer farther out in the Bay.

Kelp is to be found near the Southern and Western shores, especially the latter.

There are no hidden dangers within the Bay. In entering from the Eastward, Slip Point should be given a good berth, as a rock, awash at high water, lies about 450 metres to the NW^{ly} of that point.

There is good water close outside this rock, but foul ground between it and

2.

the point. Except in very thick weather, or at night, this rock should be seen, as the swell continually breaks upon it. A bell buoy should be placed to mark this rock at night or thick weather. There is, perhaps, always sufficient swell here to operate an automatic buoy.

The School House, a prominent building on the hill in Western part of the town of East Clallam, kept well open West of the wharf at East Clallam, will lead clear of this rock.

I suggest the name "Slip Rock" as appropriate and convenient in referring to this danger.

3.

The aspect of the Coast is mountainous. In entering the Strait of Fuca sailing-vessels generally enter to the Northward of Duntze Rock, so also do many steamers.

But the San Francisco Steamers, and others from the South, that are acquainted, are inclined to enter between Duncan Rock and

3.

Tatoosh Island, both of which are always visible in seeing weather; the latter having a first order Light and Steam fog signal. In passing, vessels keep nearer to Tatoosh Island than to Duncan Rock, as a shoal, of small extent, makes out to the S^W and E^W of that rock. (See Sheet #2).

The entrance to the Strait is marked by Tatoosh Island Light and Carmanah Light on Vancouver Island, B.C., the former being the more powerful, as well as more important. Once inside of the entrance dangers, a course is readily laid by Chart to port of destination.

4.

In the middle of the Strait of Fuca, in the vicinity including this Survey, the depth is over 100 fathoms. There is deep water for navigation purposes close inshore.

The chief difficulty that confronts the navigator is finding an anchorage when needed, on account of this boldness of shore line, to which is added the very

4.

bad character of the bottom, generally, for holding an anchored vessel against the strong winds and tides that prevail.

The dangers in entering the Strait of Juan de Fuca are the Duncan and Duntze Rocks, the former being always uncovered. A shoal with four (4) fathoms on it, which would become a danger in heavy westerly weather, was discovered to the SE of Duncan Rock, and the hydrography relating thereto is represented on Sheet No. 2, and contained in accompanying record books. Pilots are constantly on lookout outside the entrance to the Strait of Fuca, and are usually the masters of tug boats who have qualified as pilots. Only sailing vessels need a pilot in these waters, and such craft usually accept the services of a tug before entering the straits, or as soon after as possible. Pilotage is not compulsory, and some vessels dispense with such service, but this is exceptional, especially in the

4.
 case of large vessels.

5.
 The shore line is of a permanent nature.

6.
 The tidal currents follow the general direction of the shore line. No observations of their strength were made, but they are strongest at springs, probably 5 to 6 knots in this portion of the Strait.

The tidal currents, due to the higher high and lower low tides of the day, at springs, continue to run about $2\frac{1}{2}$ hrs. after high & low water, respectively.

7.
 The hydrography done off Middle Point and near Duncan Rock, comprised in sheets #2 and #3, is in the nature of a re-survey. As the bottom in both places is hard rock, it is unlikely that much change has occurred since the surveys made in 1881 and 1888.

8.
 Ice is unknown in these waters, and while

8.

freshets are frequent in the various streams during the rainy season - November to April - they do not concern navigation, at least in the Strait of Fuca. Fog is the great impediment to navigation and to satisfactory prosecution of survey work. The worst season for fog is from about the middle of July to the middle of October - Occasional fogs occur at other times, but do not last so long. During the period above named, fogs of many days duration are not uncommon.

Smoke, caused by forest fires, and the burning of brush by the settlers along the shores of the Strait, is also during the summer and autumn a serious drawback at times to work.

9.

During the winter months the prevailing winds are from the S.E., usually shifting to S.W. The heaviest gales are from these directions. Anchored exposed to these winds are not safe, and are certainly

9.

uncomfortable at such times. Instance Port San Juan, Vancouver Island. A heavy swell rolls into the Strait with a S.W. gale, and its influence is felt for some distance inside.

10.

There are no wrecks within the limits of this Survey. A stranded vessel in these waters has little chance of surviving a heavy storm. Vessels are more apt to go ashore on Vancouver Island than on the Washington shore.

There are no life saving stations, nor hospitals, in this vicinity. The nearest marine hospitals are at Port Townsend, Wash. and at Victoria, B.C.

11.

None within the limits of this Survey.

12.

Fresh water may be obtained from the streams that empty into the Strait both on the Washington and Vancouver Island shores. It is preferable, however, to water at Port Angeles,

12.

where good water in abundance is led down to the wharf in a pipe. The supply is inexhaustible. Ship's supplies have to be ordered from Port Townsend or the other sound ports. Vessels usually go to Seattle, Wash., or Departure Bay, B.C. for coal. At these places coaling piers are erected, and the coal dumped into vessels laying alongside by means of chutes. There appears to be an inexhaustible supply at both places. All native coal is bituminous. There are repair shops at all the larger cities of the sound, a special report upon which was made by me, to the Hydrographic Inspector, under date of Aug. 14, 1893.

13.

There are wharves at both East and West Col all am. The depth alongside, at mean low water, is about 18 and 10 feet, respectively.

14.

There is a Weather Signal Observer at nearly all the towns along the Washington shore of the Strait, including one at Tatoosh

14.

Island. A telegraph line connects all with Port Townsend, and their weather reports are published daily in the principal papers of the Sound. Cautionary signals are shown at these stations. There is no time ball, but the time by telegraph may be obtained by arrangement with the Manager of the Pacific Postal Telegraph Co. at Port Townsend.

15.

There is a Branch Hydrographic Office at Port Townsend. Vessels are reported from Tatoosh Island, Port Townsend and other Sound ports. The International Signal Code is the one used in communications to or from vessels.

16.

None within the limits of this survey.

17.

There is a Post Office, at both East and West Blallam, there being tri-weekly mail commⁿ by steamer with Port Townsend. This boat also carries freight and passengers.

17.

By means of the Government Weather Service, telegrams may be sent from East Clallam to any point, and obtained in like manner. The line is frequently down during the stormy season. There are no rail roads in this section of the country.

18.

No Custom House in limits of Surrey. The chief Port of Entry is Port Townsend.

19.

There are settlements at both East and West Clallam, the former being the larger of the two places. There is a saw mill at East Clallam, and lumber is the principal industry here. There is an occasional vessel loading lumber at this place for San Francisco, otherwise the trade done is by the regular mail steamer referred to in par. 17. At West Clallam is a Tanning Extract establishment, but it is not operated continuously. This is the only noticeable mercantile industry at this place.

20.

Kelp is to be found along both shores of the Strait. It appears to be confined within the six fathom curve. Kelp grows from, and indicates, rocky bottom. There are no hidden dangers, marked by kelp, within the limits of this Survey. Kelp appears to be thickest in the summer and fall, and to wither during the winter months -

21.

The town of West Clallam is also called simply Clallam, which is the name of the Post Office. The former name of West Clallam appears to be more commonly used, however.

————— Additional Remarks —————

My Instructions for the season's work directed an examination for a rock off Point Wilson, Wash. — The locality was sounded over several times, but no data indicating a condition not already shown on the chart was secured, and, therefore, none is submitted.

It is my belief that the Str. "Monticello", which reported having touched this rock, was closer inshore than the reported locality. There is foul ground in this vicinity, which is well marked by kelp. Indeed, at time of examination, the kelp was so thick here as to render dragging with a line impracticable.

The reported rock off Middle Point and reported shoal near Duncan Rock were both found by dragging with a submerged line, and the hydrography relating to these, accompanies this report.

Buoys have been placed by the Light House Establishment outside the discovered rock off Middle Point and the foul ground off Point Wilson.

Very respectfully,
 Duncan H. Hyman
 Lieut., U.S.N., Asst. C. & G. Survey,
 Comdg. Str. "Esedney"

Str. Redney

Statistics of Field Work executed by

Lieut. Lucian Flynn, U.S.N.

Date of beginning field work.....

May 19, 1893

Date of closing field work.....

Oct. 17, 1893

RECONNAISSANCE:

Area of, in square statute miles

Lines of intervisibility determined as per sketch submitted.....

Number of points selected for scheme

BASE LINES:

Primary, length of.....

Secondary, length of.....

Beach measurements, length of.....

Number of days employed in measurements of base.....

Number of days employed in re-measurements.....

TRIANGULATION:

Area of, in square statute miles

Signal poles erected, number of.....

Observing tripods and scaffolds built, number of.....

Observing tripods and scaffolds built, heights of.....

Days occupied in opening and verifying lines of sight, number of.....

Stations occupied for horizontal measures, number of.....

Stations occupied for vertical measures, number of.....

Geographical positions determined, number of

Elevations determined trigonometrically, number of

GEODESIC LEVELING:

Elevations determined by spirit-leveling of precision, number of.....

Lines of geodesic leveling, length of

LATITUDE, LONGITUDE, AND AZIMUTH WORK:

Latitude stations occupied, number of

Pairs of stars observed for latitude, number of

Average number of observations on a pair.....

Longitude stations, telegraphic, number of.....

Longitude stations, telegraphic, number of nights on which signals were exchanged

Longitude stations, chronometric, etc., number of

Azimuth stations, number of.....

Number of nights of observations for azimuth

Number of stars observed for azimuth

GRAVITY DETERMINATIONS:

Number of pendulum stations occupied.....

MAGNETIC WORK:

Stations occupied for observations of the magnetic declination, number of.....

Stations occupied for observations of the magnetic dip, number of.....

Stations occupied for observations of the magnetic intensity, number of.....

TOPOGRAPHY:

Area surveyed in square statute miles.....

Length of general coast-line in statute miles.....

Length of shore-line of rivers in statute miles.....

Length of shore-line of creeks in statute miles.....

Length of shore-line of ponds in statute miles.....

Length of roads in statute miles.....

Topographic sheets finished, number of.....

Topographic sheets, scales of.....

Topographic sheets, limits and localities of:

HYDROGRAPHY:

Area sounded in square geographical miles.....

Number of miles (geographical) run while sounding.....

Number of angles measured.....

Number of soundings.....

Number of tidal stations established.....

Number of specimens of bottom preserved.....

Current stations, number of.....

Hydrographic sheets finished, number of.....

Hydrographic sheets, scales of.....

Hydrographic sheets, limits and localities of:

265.75
228.39
13.69
1190
2
36
none
3
1/1000 1/2000 1/8000

Sheet No. 1 Strait of Juan de Fuca, Wash
 Sheet No. 1^a From Pillar Point to Waaduk Id. Wash
 Sheet No. 2 Clallam Bay, Wash
 Sheet No. 2 Off Middle Point Wash (Tracing)
 Sheet No. 3 Off Tatoosh Island, Wash (Tracing)

PHYSICAL HYDROGRAPHY:

Number of soundings on cross-sections	
Current stations, number of	
Deep-sea current stations, number of	
Deep-sea surface current observations, number of	
Deep-sea sub-surface current observations, number of	
Number of observations of density of water	
Number of observations of temperature of water	
Tidal stations established, number of	
Miles (geographical) run in deep-sea sounding	
Number of deep-sea soundings	
Number of specimens of bottom preserved	
Locality of work; results, how shown, etc.:	

The party was mainly employed during the season in the triangulation of the Strait of Juan de Fuca associated with Assistant J. J. Gilbert, U.S.C. & G. Survey, hydrography being done at odd times when it was possible to leave Mr. Gilbert and party without interfering with the triangulation work.

Lucian Hymus
Lieut U.S.N. Chief of Party.

Statistics Sheets N^o 1, 1^a, 2 + 3 Strait of Fuca, Wash.

No days on working grounds	151
No days hydrographic work	24
No days prevented by weather, &c.	105
No Sundays	22
No days building signals	5
No signals built	18

Sheets N^o 1 + 1^a
Number of

Vessel	Sdg Books	Angle Books	Tide Books	Fair Journals	Fair Angle Books	Fair Tide Books
Steam Launch	1			1		
"Gedney"	1	1	2	1	1	2

Tide Stations, 2, One at Clallam Bay, One at Waaddah Island, Wash.

Sheet N^o 2 (Tracing)

Vessel	Sdg Book	Tide Book	Fair Journal
Steam Launch	1	1	1

Tide Station, Protection Island, Wash.

Sheet No. 3 (Tracing)

Vessel	Qty. Books	Fair Journal	
"Gedney"	1	}	included in Journal for Sheet No. 2
Steam Launch	1		
Tide Station, Waaddah Island, Wash.			

Recorders.	Leadsman	Tide Observers
Apothy A F Berryhill	Ernest Meyer (Mat 2 nd c)	De Britman (QM 3 rd c)
A. A. Brieman (QM 3 rd c)	Jenny Dietrich (QM 2 nd c)	Alex Flood (Sea)
	Thos. P. Stilyard (QM 2 nd c)	
	Nils Gabrielson (QM 3 rd c)	
	M. A. Larsen (Sea)	

Day Letters of Ship + Boats

"Gedney"	Capital Letters	— red
Steam Launch	Small Letters	— blue

Sheets No 1 + 1a

Strait of Juan de Fuca Wash
Began July 26, 1893 (Area 265 sq. miles)
Ended Sept 22, 1893

Scale $\frac{1}{80000}$
Lieut. Lucian Flynn, USN
In chg. of Party

Date	Letter	Books	Miles	Number of Soundings	Angles	Vessel	Observers
July 26	A	1	30.25	33	63	"Gedney"	Lieut. Lucian Flynn
" 29	B	1	15.63	23	46	"	Lieut R.T. Lopez
" 31	b	1	26.60	27	54	"	Ens. Benj. Wright
Aug. 1	D	1	11.2	12	22	"	F.C. Schubert (Geo.)
" 15	E	1	11.1	12	24	"	
" 16	F	1	16.8	19	33	"	
" 17	G	1	11.5	12	24	"	
" 18	H	1	14.6	18	34	"	
Sept 19	I	1	11.35	25	50	"	
" 20	J	1	8.45	19	38	"	
" 21	K	1	14.50	35	70	"	
" 22	L	1	8.60	15	30	"	
Totals	12	1	180.58	250	488		

Sheets N° 1 + 1^a (cont.)

Date	Letter	Books	Miles	Sigs.	Angles	Vessel	Observers
Sept 19	a	1	8.0	124	53	S-Launch	Ens Benj Wright
20	b	1	4.7	71	47	"	F.C. Schubert (Yeo.)
21	c	1	4.1	67	41	"	
22	d	1	2.4	44	29	"	
27	e	1	4.22	133	40	"	} Sheet N° 1 ^a
28	f	1	6.89	154	57	"	
Totals	6		30.31	593	267		

Recapitulation of Sheets N° 1 + 1^a

Vessel	N° Days	No Miles	No Angles	No. Soundings
"Gedney"	12	180.58	488	250
Steam Launch	6	30.31	267	593
Totals	18	210.89	755	843

Sheet N° 2 (Tracing)

Off Middle Pt Wash
Began July 18, 1893
Ended July 20, 1893

(Area Sounded 1/2 sq. mile)
(Examination for reported Rock)
Scale, $\frac{1}{20000}$
Lieut. Lucian Flynne,
In chg of Party.

Date	Letter	Books	Number of			Vessel	Observers.
			Miles	Soundings	Angles		
July 18	a	1	3.75	95	30	S. Launch	Ens. Benj. Wright
19	b	1	6.75	192	80	"	F. C. Schubert (Geo.)
20	c	1	.00	3	12	"	
Totals	3		10.50	290	122		

Sheet N° 3 (Tracing)


Off Tatoosh Island Wash
Began Sept 8, 1893
Ended Sept 11, 1893

(Area Sounded 1/4 sq mile)
(Examination for reported)
Scale $\frac{1}{10000}$
Lieut. Lucian Flynne,
(Shoal off Duncan Rock) In chg of Party

Date	Letter	Books	Number of			Vessel	Observers.
			Miles	Soundings	Angles		
Sept 8	a	1	2.0	22	42	S. Launch	Lieut. Lucian Flynne
" 11	b	1	2.0	15	48	"	Lieut. R. F. Lopez
" 11	A	1	3.0	20	40	"Tedney"	Ens. Benj. Wright
Totals	3		7.0	57	130		F. C. Schubert (Geo.)

Location of Triangulation Points and Signals
in the Strait of Juan de Fuca furnished
by Asst. J. J. Gilbert, U.S.C. & G. Survey
to Hydrographic Party in charge of Lieut.
Lucian Flynn, U.S.N., Summer of 1893.

Name of Signal	Latitude			Longitude		
Sherringham	48°	22'	39.405	123°	55'	16.659
Glacier	48	23	43.265	123	59	05.918
Jordan House	48	25	14.706	124	03	10.892
Jordan	48	25	20.171	124	03	20.491
Cascade	48	26	45.016	124	08	57.796
Arch Rock	48	27	27.642	124	12	18.182
Sombrio	48	29	06.608	124	17	27.034
Juniper	48	30	39.672	124	22	22.328
Rock	48	31	31.682	124	26	45.194
Owen	48	32	34.970	124	29	45.979
Sandstone	48	33	12.685	124	32	24.332
Vancouver	48	34	24.117	124	38	32.919
Striped Peak	48	09	35.454	123	41	05.259
Boide	48	10	20.068	124	01	23.058
Landslide	48	13	07.790	124	06	20.953
Ship	48	15	40.339	124	14	19.587

Name of Signal.	Latitude.			Longitude.		
Coalmine (Mini)	48°	14'	51.966	124°	11'	50.907
Edge	48	15	48.013	124	14	53.394
Sengon	48	16	03.204	124	17	51.154
Reynolds	48	17	13.022	124	21	21.528
Knob	48	20	15.396	124	29	38.298
Sail Rock	48	21	33.098	124	32	37.510
Seal Rock	48	21	46.334	124	32	48.562
Beach	48	22	03.184	124	33	46.740
Waaddah (Δ)	48	23	07.465	124	35	53.577
Waaddah (signal)	48	23	07.183	124	35	53.339
Tatoosh light	48	23	20.344	124	44	06.982
Bluff (East end)	48	27	05.644	124	09	54.016
 Bluff (West end)	48	27	06.169	124	09	59.328

Fog - Strait of Fuca.

Mean Barometer during Fog, 30.2.

During the year 1884 more than half of the fogs occurred in the forenoon. No smoke spoken of in '84 - In August 1885 there occurred 6 days of fog alone, 10 days on which the fog whistle was used for smoke alone, and on 15 days for fog and smoke combined. The last six days of July 1885 whistle was used for smoke alone. Very little smoke in Sept '85.

Thick smoke on two occasions Aug '86
 " " " three " Sept '87
 No " needed in 1888

Thick " on 11 days of Aug 1889
 " " " " " Sept 1889

In all cases the fogs appear to commence in the morning. The Table shows the number of days on which fog signal was used, also the total number of hours during each month, at New Dungeness Light House. Information taken from Light Keeper's Log - Whistle used at times for smoke alone.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1884	5	4	2	1	2	1	1	1	1	1	1	1
1885	5	2	2	7	10	7	10	6	3	6	11	5
1886	7	3	5	0	3	1	7	16	11	4	3	10
1887	6	2	6	4	1	1	1	14	7	9	3	3
1888	9	7	6	2	1	6	1	15	10	8	4	4
1889	0	0	3	7	3	5	2	27	6	7	5	2
1890	5	2	6	10	3	8	8	16	21	19	15	10
1891	4	1	3	10	0	2	3	5	10	6	0	2
Total	37	19	34	150	35	160	19	136	37	139	44	37
Average for month.	4.6	2.3	4.2	16.2	4.2	20	2.2	16.0	4.6	17.9	5.5	4.6

Occurrence of Fog - Strait of Fuca - New Dungeness Light

"D" = No. of days on which fog occurred during the month.
 It = No. hours duration of fog during month.