











1873. Notebook, No. 1.

W. H. Dall

Actg. Asst. U. S. C. S. in charge  
Sch. Yukon.

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Monday April 28

At two p. m. weigh anchor &  
beat out of San Francisco Bay  
passing the heads at 4 P. M.  
and sail for Unalaska. A. T.  
Wind W by S. Ther. 62. Cloudy-

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Tuesday April 29

Wind fresh N. W. sky half clear.  
Bar. 30.440. Ther. 60.

Commence current observations

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Wednesday Apr. 30

Wind light N. W. Ther. 62. Water  
58. Bar. 30.460. Half clear

Commence hydrometric observations

Water at 4 P. M. reads -.24

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Thursday May 1

Commence sea time. 4 P. M. Bar.

30.44, Air. 66°, Water 62°, sp. gr. .24

8 P. M. Bar. 30.42°, Air 62°, Water 60

12 P. M. Bar. 30.42, Air 60°, Water 60

4 A. M. Bar 30.35, Air 59, Water 60

8 A. M. Bar. 30.39, Air 59, Water 60°

12 M. Bar. 30.43, Air 70, Water 59°

Wind ~~fr~~ NW. Half clear.

Friday May 2, 1873

Time	Bar.	Air.	Water.	Sp. gr.
4 P.M.	30.46	60 NW	59	-0.24
8	30.49	59 ..	60	
12	30.52	58 NNW	60	
4 A.M.	30.50	57 ..	59	
8	30.55	57 NW by N	60	
12	30.59	62 ..	58	

Wind WNW, cloudy.

Saturday May 3, 1873

Time	Bar.	Air.	Water	Sp. gr.
4 P.M.	30.56	60 NW by N	59	-0.26
8	30.56	56 ..	59	
12	30.59	56 ..	60	
4 A.M.	30.56	56 ..	58	
8	30.61	56 NW	58	
12	30.60	67 ..	60	

Wind NW, cloudy.

Sunday May 4

Time	Bar.	Air.	Water.	Sp. gr.
4 P.M.	30.61	65 NW	62	-0.24
8	30.60	62 W by N	62	
12	30.59	60 W	62	
4 A.M.	30.55	60 NNW	60	
8	30.56	61 W	60	
12	30.61	63 ..	59	

Wind W by N. Clear.

Monday, May 5, 1873

Time	Bar.	Air.	Water.	Sp. gr.
4 P.M.	30.59	64	58	-0.24 N
8	30.60	60	59	
12	30.61	56	57	N E
4 A.M.	30.59	56	57	E N E
8	30.59	58	58	S E by E
12	30.59	67	58	

Wind light easterly, Cloudy

Tuesday May 6

Time	Bar.	Air.	Water	Sp. gr.
4 P.M.	30.49	62	58	-0.25 S.E.
8	30.49	59	58	
12	30.48	57	56	
4 A.M.	30.35	56	56	
8	30.32	56	55	
12	30.22	62	54	

Wind fresh SE, Cloudy

Wednesday May 7

Time	Bar.	Air.	Water.	Sp. gr.
4 P.M.	30.13	62	54	-0.25 S.E.
8	30.10	56	53	S E
12	29.99	55	54	S S W
4 A.M.	29.96	52	51	
8	30.01	52	53	S W
12	29.99	56	51	

Wind S E to S W moderate, Cloudy

Thursday May 8<sup>th</sup> 1873

Time	Bar.	Air	Water	Sp. Gr.
4 P.M.	30.00	56	50	-0.25 SW
8 "	29.98	51	49	SW
12 Mid.	29.95	51	49	Variable
4 A.M.	29.96	50	50	SSW
8 "	29.76	51	49	"
12 M	29.69	52	48	"

Wind very strong, cloudy

Friday May 9<sup>th</sup> 1873

Time	Bar.	Air	Water	Sp. Gr.
4 P.M.	29.52	50	47	-0.25 S.E.
8	29.54	45	46	SW
12	29.60	42	44	WSW
4 A.M.	29.66	44	46	"
8	29.70	44	45	"
12	29.65	47	46	"

Blows a gale, cloudy with rain

Saturday May 10<sup>th</sup> 1873

Time	Bar.	Air	Water	S.G.
4 P.M.	29.69	48	46	-0.25 WSW
8	29.77	44	47	WSW
12	29.76	43	44	"
4 A.M.	29.65	43	45	"
8	29.66	43	44	"
12	29.77	48	44	"

Blows very fresh, cloudy train

Sunday May 11<sup>th</sup> 1873

Time	Bar.	Air	Water	Sp. Gr.
4 P.M.	29.80	43	44	-0.25 WSW
8	29.92	43	43	WSW
12	30.00	42	44	SSW
4 A.M.	30.02	42	43	SW
8	29.80	42	43	"
12	29.65	45	42	S

Blowing a gale, cloudy train

Monday May 12<sup>th</sup> 1873

Time	Bar.	Air	Water	Sp. Gr.
4 P.M.	29.65	45	42	-0.25 S
8	29.58	43	42	SW
12	29.51	41	41	"
4 A.M.	29.40	40	41	"
8	29.40	39	40	WSW
12	29.40	42	40	"

Blows very strong cloudy + snow

Tuesday May 13<sup>th</sup> 1873

Time	Bar.	Air	Water	Sp. Gr.
4 P.M.	29.42	41	40	-0.27 WWS
8	29.48	40	39	WWS
12	29.50	40	40	"
4 A.M.	29.55	38	39	"
8	29.61	39	39	WSW
12	29.64	44	39	"

Wind more moderate with rain



Wednesday May 14. 73

Time	Bar.	Air.	Water.	sp. gr.	Winds
4 P.M.	29.60	46°	40°	-0.27	W.S.W.
8 ..	29.62	40	39		SW
12 ..	29.61	39	39		SW
4 A.M.	29.50	39	39		SE
8 ..	29.33	39	40		"
12 M.	29.22	39	40		"
4 P.M.	29.08	41	41	-0.27	SW
8 P.M.	29.04	40	40		Calm
12 P.M.	29.01	40	40		W

Winds light with rain. Many birds seen (This day contains 36 hours to recommence civil time and conform with the original note books for the season)

Thursday May 15

Time	Bar.	Air.	Water.	Sp. gr.	Winds
4 A.M.	29.17	38°	39°		NW
8 ..	29.35	42	40		W
12 ..	29.46	40	39		W
4 P.M.	29.56	40	39	-0.265	WSW
8 ..	29.60	35	39		"
12 ..	29.62	34	39		"

Cloudy, very light winds or nearly calm

Friday May 16

Time	Bar.	Air.	Water.	Sp. gr.	Winds
4 A.M.	29.62	33°	39°		WSW
8 ..	29.70	33	39		"

Time	Bar.	Air.	Water.	sp. gr.	Winds
12 M.	29.80	38°	38°		WSW

4 P.M.	29.75	42	39	-0.265	"
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8 ..	29.78	38	38		"
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12 ..	29.79	36	39		"
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Wind in A.M. moderate. Cloudy with snowsqualls in P.M. Sight Sannakh Island 15 miles west in the afternoon. There is a good deal more low land about this island than is apparent on the charts.

In lat. 54° 23' N and Lon. 162° 08' W sound in 75 fms hard bottom.

Peak of Sannakh and end of land WSW by compass

Saturday May 17

Time	Bar.	Air.	Water.	Sp. gr.	Wind
4 A.M.	29.70	35°	37°		WSW
8 A.M.	29.85	39	38		SW
12 ..	29.80	42	40		"
4 P.M.	29.75	46	39	-0.26	SSW
8 ..	29.78	42	39		Calm
12 ..	29.80	39	39		"

Take a series of observations to determine the position of a codbank, on which we catch a large number of cod and halibut about 9 A.M. <sup>in 20 fms</sup> These will be found in the astronomical

notebook. At the commencement of these circummeridian observations, take the following bearings by compass-

E end of Saunakh group NW  $\frac{1}{2}$  W  
 W " " " E island W  $\frac{3}{4}$  N  
 E " " " Peak " W  $\frac{1}{2}$  N  
 Peak bears W (alt. by sextant  $0^{\circ} 41' 30''$ )  
 W end of Peak island W  $\frac{1}{2}$  S  
 Outlying rocks W by S

20 minutes after, at end of observations having gone one mile on a W  $\frac{1}{2}$  S mag. course, take the following bearings.

Easternmost small rocks W by S  $\frac{1}{2}$  S  
 " " end next island W  
 S " " Peak " W  $\frac{1}{2}$  N  
 Peak (alt.  $0^{\circ} 48' 20''$ ) W by N  $\frac{1}{2}$  N  
 E end peak island WNW  
 W " next " NW by W  
 E " " " " NNW  $\frac{1}{2}$  W  
 Breakers off last N by W  $\frac{3}{4}$  W  
 Southern most rocks WSW

Sunday May 18. 73

Time	Bar.	Air	Water	Sp. gr.	Winds
4 A.M.	29.82	36°	39°		N
8 " "	29.89	42	38		NNW
12 M.	29.95	50	40		WSW
4 P.M.	30.00	49	40	-0.255	E
8 " "	30.01	41	39		
12 " "	30.05	38	38		NNW

Nearly clear, very light airs or calm. See Shishaldin & Isanotsky volcanoes.

Monday May 19. 73

Time	Bar.	Air	Water	Sp. gr.	Winds
4 A.M.	30.06	35°	36°		NW by W
8 " "	30.20	33	36		NW
12 " "	30.20	41	39		" "
4 P.M.	30.27	38	39	-0.255	NNW
8 " "	30.30	33	39		"
12 " "	30.32	31	37		WNW

Fresh breeze, cloudy with some fog. Get through the Uminak Pass beating against a 3 knot current. Pass the NE end of Akhuv and look into the bay which Smith supposes to contain a harbor, but see nothing remarkable.

Tuesday May 20

Time	Bar.	Air	Water	Sp. gr.	Winds
4 A.M.	30.38	30°	37°		N
8 " "	30.38	30	36		NNE
12 " "	30.40	44	36	-0.255	" "

Come into Captains Bay about 8 A.M. and anchor in Heilink Harbor about 10.30 A.M. having made the voyage in 21 days and 12 hours, the quickest time from San Francisco

to Unalashka, yet on record.  
Weather cloudy with fresh N E breeze

Wednesday May 21. 73

Cloudy, very strong, NNW wind with snow squalls. Examine instruments and measure a staff for the small Casella theodolite to use as a telemeter. Between the upper & lower wires at a distance of two meters, with a correction of 0.2286m four inches are subtended and between each pair of wires two inches. The staff is seven feet long which will admit of measuring 84 meters with it. Put out minimum and deep-water thermometer and carry on our observations henceforward at the hours of 6 A.M., 12 noon & 6 P.M. each day.

Time	Bar.	Air	Surf. water	Deep ds.	Wind
6 A.M.	—	33°	39°	40°	N
12 M.	30.16	34	—	—	N
6 P.M.	30.14	33	38	—	NNW

Thursday May 22

Cloudy with snow squalls and strong NW by W & W wind. Occupied in examining instruments and cler-

ical work. Min. Ther. 31°

Time	Bar.	Air	Sur. water	Deep ds.	Wind
6 A.M.	30.11	32°	38°	40°	NW
12 M.	30.12	49	—	—	W
6 P.M.	30.22	40	38	—	NW

Friday May 23. 73

Morning cloudy with fresh wind and snow squalls. Min. Ther. 32° 5'. Get meteorological record from Jan 1, 1873 to date kept by the Rev. Innocentius Shayeshnikoff, priest of Unalashka, with the thermometer which I left with him last year.

6 A.M.	30.32	34°	39°	40°	NW
12 M.	30.40	42	—	—	O
6 P.M.	30.45	38	38	—	S

Saturday May 24

Wind light. Weather thick cloudy & raining. Min. Ther. 34°

Work all day over clerical work and repairing signals.

6 A.M.	30.42	34°	39°	40°	SW
12 M.	30.33	42	—	—	S
6 P.M.	30.31	40	38	—	S

Sunday May 25

Morning sky partly clear. Wind fresh. Min. Therm. 34°

Go ashore at 7 A.M. with Mr. Baker and attempt observations for time with vert. circle No. 75. Come aboard at 10 A.M. at three P.M. go out again and continue observations which are soon interrupted by clouds.

Time	Bar.	Air	Sur. water	Depths	Wind
6 A.M.	30.34	41°	39°	41°	W
12 M.	30.38	57	-	-	W
6 P.M.	30.40	54	38	-	SSW

### Monday May 26

Cloudy nearly calm. Sailing master Herendeen goes to Kalkhta Bay in a bidarka with two natives to search for a stick to replace our jibboom. Go ashore and work at adjustments of instruments and testing new telemeter. P.M. go to Ulaikhta spit and take a series of observations for determining the magnetic azimuth of the baseline of the sun of this harbor with observations for astronomical azimuth at the same time, which are interrupted by clouds & wind. Back by 8 P.M. Capt Herendeen

returns without having obtained a spar.

Time	Bar.	Air	Sur. water	Depths	Wind
6 A.M.	30.48	40°	40°	42°	SW
12 M.	30.47	54	-	-	SW
6 P.M.	30.34	46	40	-	WSW

### Tuesday May 27

Morning cloudy with occasional bits of clear sky. Wind NW fresh in puffs. Go to Ulaikhta spit in A.M. to obtain another series of observations for magnetic azimuth of baseline. Return at noon. P.M. cloudy wind strong with occasional snow squalls. Busy in electrical work.

Time	Bar.	Air	Sur. water	Depths	Wind
6 A.M.	30.24	40	40	42	NW
12 M.	30.20	55	-	-	N
6 P.M.	30.15	42	40	-	N

### Wednesday May 28

Time	Bar.	Air	Sur. water	Depths	Wind
6 A.M.	30.15	36°	40°	42	N
12 M.	30.10	37	-	-	N
6 P.M.	30.09	36	40	-	NW

Wind fresh with a good deal of sleet and snow. Min therm. 32°.

Thursday May 29. 1873

Time	Bar.	surf. water	deep do.	Wind	air
6 A.M. 29.95		39°	41	N	35
12 M 29.97		-	-	NW	45
6 P.M. 30.00		40	-	NW	43

Storming hard with rain + squalls  
P.M. rain ceases. Go ashore and establish a station for astronomical purposes, consisting of three blocks of wood, buried in a mass of stones and coming to the surface so as to afford a steady support for the tripods of our instruments, with a flat stone in the middle for placing the mercurial horizon on. The position of the station is nearly on the spot where our astronomical observations of 1871-2 were taken.

Albatross  $\Delta$  bears S  $77\frac{1}{4}$  E

A  $0^{\circ} 0' 0''$  B  $180^{\circ} 0' 0''$

Church cupola bears S. 36 E

A  $41^{\circ} 21' 40''$  B.  $221^{\circ} 22' 00''$

Keystone  $\Delta$  bears S  $77$  W

A 154. 13. 20 B. 334. 13. 40

Evening being nearly clear we go out with the vertical circle

and attempt to get time from one of the stars in the constellation Aquilae, but the lamp gives us so much trouble that we have not great confidence in the readings. Return to vessel at 2.30 A.M. Min. Ther.  $33^{\circ} 5$

Friday, May 30. 1873

Time	Air	surf. water	deep do	Wind	Bar.
6 A.M. 42°	39°	41°	NW	29.96	
12 M 56	-	-	N	29.95	
6 P.M. 57	42	-	N	29.96	

Morning clear + fine, wind light + afterwards fresh. Min. Ther.  $35^{\circ} 0$   
Go out at 6 A.M. with sextant and artificial horizon to obtain a series of equal altitudes for time. P.M. complete the series which promises good results.

Saturday May 31

Time	Bar.	Air	surf. water	deep do.	Winds
6 A.M. 30.00	42°	41°	41°	N	
12 M 30.02	54	-	-	NE	
6 P.M. 30.08	48	43	-	NE	

Morning cloudy with light NW wind; later wind fresher. All hands busy, fitting new jibboom. P.M. Take the boat + go to

Hog Island and set up a new signal on the edge of the bluff on the S.W. end. 136 feet above the beach; to be called Island Signal. Return to vessel at 7 P.M. with a dead calm and fog coming in.

Sunday June 1, 1873

Time. Bar. Air. Surf. water deep do Wind.

6 A.M. 30.10 60° 42° 40 var. W

12 M. 30.15 62 - - NE

6 P.M. 30.13 52 47 - NE

Morning remarkably clear and fine. Go ashore to the new astronomical  $\Delta$  and take a series of observations for astronomical azimuth between the  $\Delta$  and the apex of the church cupola. Max of  $\theta$  observed 62°.

Late in P.M. foggy wind mod.

Monday June 2

Time. Bar. Air. Surf. water deep do Wind

6 A.M. 30.13 44° 45° 40 var. W.

12 M. 30.15 60 - - NE

6 P.M. 30.15 62 47 - N

Morning clear & fine wind light.

Min  $\theta$  36. P.M. Mr. Baker takes azimuth observations. Take the boat, Mr. Noyes, bidmate & 3 men

and start for the site of the old Igognak or Eider village, to erect a signal on the bluff to be used in the S.W. of the Bay. Arrive about 1 P.M. Spend the P.M. in erecting the signal which is on the <sup>top of the</sup> high bluff behind the point. & composed of three scantling stayed & anchored as in the case of the Islands. Return to the spit about 9 P.M. after having taken a series of angles & bearings to determine the position of the signal and a series of telemeter observations to determine its height which is about 522 feet. Camp for the night.

From Eider  $\Delta$

Near Cape Cheerful -

NE shore of Akutan bears N 35 E  
 from A. 0° 0' B 180° 0'

Priest Rock bears N 51  $\frac{1}{4}$  E.

A. 16° 10' B. 196° 09'

S. Head Constantine Bay N 76 E

A 41° 05' B 221° 06'

North Head  $\Delta$  N 92  $\frac{3}{4}$  E

A 67° 43' B 237.42

End of reef N of Ulakha Head  $N 108\frac{1}{2} E$

A  $73^{\circ} 22'$  B  $253^{\circ} 21'$

Needle Rock bears North  $117\frac{1}{4} E$

A  $82^{\circ} 24'$  B  $262^{\circ} 24'$

Keystone  $\Delta$  bears N  $145\frac{3}{4} E$

A  $110^{\circ} 44'$  B  $290^{\circ} 43'$

W Head of Captain's Harbor S  $46\frac{1}{2} E$

A  $119^{\circ} 20$  B  $299.20$

Tuesday June 3

Time. Bar. Air. Sur. water. Deep ds Wind

6 A.M. 30.17  $45^{\circ}$   $44^{\circ}$   $41^{\circ}$  N

12 M. 30.21 49 - - NE

6 P.M. 30.22 49 44 - - NE

Go out in the A.M. after breakfast and take some soundings to determine the character of the anchorage, which is in from 22 to 30 fms hard sand & mud, close in to the spit and 30 fms without bottom, further out but still well inside the reef. The shore is pretty well laid down in the old chart as is the reef which protects the anchorage. Day fine & clear a little fog on the east side of the Bay. Start back about noon having a smart breeze after getting about half way over

Wednesday  
Thursday June 4

Time. Bar. Air. Sur. water Deep ds Wind

6 A.M. 30.09  $39^{\circ}$   $44^{\circ}$   $45^{\circ}$  NW

12 M. 29.97 53 - - N

6 P.M. 29.91 48 46 - - ESE

Cloudy with a little rain wind light in A.M. stronger with a little rain in P.M. All hands busy filling water & repairing tide gauge house

Thursday June 5

Time. Bar. Air. Sur. water deep ds Wind

6 A.M. 29.85 43  $45^{\circ}$  40 SE

12 M. 29.86 48 - - SE

6 P.M. 29.89 44 46 - E

Rainy with moderate wind.

Friday June 6

6 A.M. 30.04 42  $44^{\circ}$  40 ESE

12 M. 30.11 44 - - "

6 P.M. 30.14 46 44 - SE

Raining all day, Wind light.

Saturday June 7

6 A.M. 30.15 42  $43^{\circ}$  40 SE

12 M. 30.14 45 - - "

6 P.M. 30.14 44 43 - - "

Blowing hard and raining all day

Sunday June 8

6 A.M. 30.16 42  $42^{\circ}$  40 SE

12 M. 30.16 46 - - SE

6 P.M. 30.14 45 43 - ESE

Blowing pretty fresh. Rains all day.

Monday June 9, 1873

Time	Bar.	Air	Sur. Water	Deep do	Wind
6 A.M.	30.10	41°	41°	42°	SE
12 M.	30.04	40	-	-	ESE
6 P.M.	29.96	44	42	-	SE

Wind fresh in squalls, some rain.

Tuesday June 10

Time	Bar.	Air	Sur. water	Deep do.	Wind.
6 A.M.	29.87	44	41	38	E
12 M.	29.87	62	-	-	N
6 P.M.	29.88	71	48	-	NE

Cloudy in early A.M. but soon clears  
wind moderate. Take a series of angles  
from the new astronomical A and  
Albatross to connect the line on which  
the azimuths have been observed with  
the harbor & w. P.M. connect the Astro-  
nomical & with Station A and take  
a series of observations on the sun  
for azimuth.

Wednesday June 11

Time	Bar.	Air	Water	depths	Winds
6 A.M.	29.94	44°	42	38°	Calm
12 M.	29.88	54	-	-	N M.
4 P.M.	29.84	56	42	-	Calm
8 P.M.	29.72	52	43	-	ESE
12 P.M.	29.69	46	41	-	"

Tow out of Iliuk Harbor early  
in the A.M. and anchor off the  
town. Day very foggy, clear at in-  
tervals with very light airs. About  
6 P.M. a moderate breeze springs up  
and we sail for Chichagoff Harbor  
Attu. Cloudy.

Thursday June 12

Time	Bar.	Air	Water	Winds
4 A.M.	29.59	43°	40	ESE
8 ...	29.50	41	41	"
12 M.	29.52	46	41	"
4 P.M.	29.48	43	41	"
8 ...	29.53	42	41	"
12 ...	29.65	41	40	ESE

Weather thick, wind moderate, some rain.

Friday June 13

Time	Bar.	Air	Water	Winds
4 A.M.	29.71	40	39	NE
8 ...	29.85	42	39	"
12 M.	29.95	46	40	"
4 P.M.	29.96	45	39	"
8 ...	30.00	41	40	"
12 ...	29.99	40	40	E

Weather thick & foggy wind moderate



Saturday June 14<sup>th</sup> 1893

Time	Bar	Air	Water	Sp. Gr	Winds
4 am.	29.94	39°	39°	—	E. N. E.
8 "	29.95	40	40		"
12 M.	29.90	43	39		"
4 P.M.	29.89	42	39		E.
8 "	29.86	40	39		N.
12 "	29.85	39	40		"

Weather thick & cloudy, wind light.  
Evening a little fresher.

Sunday, June 15<sup>th</sup>

Time	Bar.	Air	Water	Winds
4 A.M.	29.89	38°	40°	N.
8 "	29.91	41	39	N. N. W.
12 M.	29.96	42	40	"
4 P.M.	29.97	42	40	"
8 "	30.00	42	40	"
12 "	30.01	42	40	"

Wind fresh. Weather cloudy.

Monday, June 16<sup>th</sup>

Time	Bar.	Air	Water	Winds
4 A.M.	30.06	41°	40°	N.
8 "	30.20	40	41	N. N. E.
12 M.	30.25	62	42	"
4 P.M.	30.26	48	44	N.
8 "	30.29	43	42	S. by S.
12 "	30.24	40	41	"

Cloudy & clear by turns, Wind very light.

About 10 A.M. see Pouldy's Island bearing S. magnetic. At noon having obtained some observations for position placing us in Lat. 52° 56' 41.2" and Long. 175° 38' 20" E. Sound as follows:

Line run out	Time	Depth	Temperature
Let go	12 h	40 m.	00 sec.
50 fms	12	40	18
50 "	12	40	38
100 "	12	41	34
100 "	12	43	25
50 "	12	44	21
50 "	12	46	05
100 "	12	47	59
100 "	12	50	03
100 "	12	52	29
200 "	12	56	51
118 " end of line	12	59	02

Total 1018 " without bottom; the deepest sounding ever taken in Bering Sea. Conditions all favorable; the sea quiet; the sound nearly plumb, and the sand cup with which the 100 lb lead was armed came up clean and uncracked, showing that no bottom could have been reached.

— Tuesday, June 17<sup>th</sup> 1843. —

Time	Bar	Air	Water	Sp. Gr.	Wind
4 AM	30.05	40°	40°		N. S. W.
8 "	30.10	41	40		"
12 M.	30.01	45	42		"
4 P.M.	30.07	43	41	25.5	"
8 "	30.04	41	41		N. N. W.
12 "	30.00	42	40		"

Foggy & cloudy, blowing a stiff breeze.

— Wednesday, June 18<sup>th</sup> —

4 A.M.	29.98	41°	41°	—	N. E.
8 "	30.00	42	41		"
12 M	30.05	44	41		"

Foggy & cloudy. About noon stand in towards Chichagoff Harbor, after Island, coming to an anchor in the middle of the Bay about 1.30 P.M.

The Harbor is a good one, but can only be entered with a fair wind and is still more difficult to get out of.

The entrance is exceedingly narrow so that there is no opportunity to tack or wear. In an emergency one may anchor outside the narrows in a small bight on the S. E. side.

A southwest wind draws in, as far as the narrows, when it comes

dead ahead. A ground swell heaves in, so that it is difficult to make headway against it in calm or light weather by towing, even with the tide, and there is no hold for an anchor in the entrance.

The latter breaks clear across during the heavy winter storms. The best holding ground inside is pretty well bare on the western side, about two-thirds of the way from the rocks to the village; 6 fms muddy gravel.

There is good water but no drift wood or growing bushes of any size.

There is a dwelling and store house occupied by the Agent of the Fur Company, and about thirty native houses in which live about 200 natives.

At the present time there is but little fish to be obtained here, though formerly abundant.

The woollies or squalls from the mountains are very severe in winter and the worst weather generally comes from the Southeast<sup>ly</sup> eastward.

Northwest weather in summer is usually more or less clear; also

much of the Southwest weather.  
Southwest and west are the prevalent summer winds.

The harbor never freezes over and the fall of snow is not large.

Very good potatoes have been raised by the Company's Agent, but no other vegetables have been tried for want of seed.

Thursday, June 19<sup>th</sup> 1873

Time	Bar.	Air	Water	Dep do	Wind
6 a.m.	29.99	40°	42°	42°	N.
12 M.	29.97	47			"
6 P.M.	29.90	44	43		"

Cloudy all day with fresh N. wind.  
There is no anchorage in Goltzsch Harbor so called on the Ex. Exp. Charts, as the water is too bold, and there are many outlying rocks. Mr Frost sounded there last summer.

The same is asserted by the natives to be true of the other Bays which indent the shore line of the island, except Massacre Bay, where there is an anchorage, though in pretty deep water, and not very good shelter.

There are no harbors on Agattu or Semichi Islands or on Pouldy.

Friday, June 20<sup>th</sup> 1873.

Time	Bar	Air	Water	Dep do	Wind
6 a.m.	29.90	40°	42°	42°	N.
12 M.	29.90	52			"
6 P.M.	29.90	50	46		N.N.E.

Half clear in the morning. Obtain observations for time and azimuth, and circummeridian altitudes for latitude.  
Wind moderate.

Saturday, June 21<sup>st</sup>

Time	Bar.	Air	Water	Dep do	Wind
6 a.m.	29.98	43°	44°	42°	N.S.W.
12 M.	29.99	51			N.E.
6 P.M.	30.02	49	45		" Lt.

Weather thick and foggy. Wind light.

Sunday, June 22<sup>nd</sup>

Time	Bar.	Air	Water	Dep do	Wind
6 a.m.	30.20	44°	43°	42°	N.E. Lt.
12 M.	30.20	53			"
6 P.M.	30.20	51	46		"

Day cloudy, wind light.

Monday, June 23<sup>rd</sup>

Time	Bar.	Air	Water	Dep do	Wind
6 a.m.	30.27	45°	44°	42°	Calm
12 M.	30.25	55			N.N.E. Lt.
6 P.M.	30.20	50	44		N.N.W.

Weather cloudy with glimpses of sunshine in P.M. Wind variable, light.

Take the large boat and visit Saranna Bay to the Eastward of Chichagoff Harbor.

This Bay is open to the North and East and affords no anchorage. There are scattered rocks and reefs, most of them visible above the surface at low water. There is a considerable depth of water in the outer part of the Bay, but near its head it suddenly shoals and terminates in a broad sand beach a mile long, through which a stream flows on which is a native fishing station. Vessels had better avoid this Bay. Return to the Harbor about 3 P.M. The tide about Attu, as in the Eastern part of the chain, invariably rises to the Westward, and falls to the South and east, causing a strong current near the shores; of which, vessels bound for the Harbor with light winds will do well to take notice.

Obtain a few observations for azimuth after returning.

— Tuesday, June 24<sup>th</sup> 1873. —

Time	Bar.	Air	Surf. water	Deep do	Wind
6 A.M.	30.07	42°	43°	42°	North
12 M.	30.05	50			"
6 P.M.	30.03	46	45		"

Weather thick, wind fresh. Getting ready for sea.  
— Wednesday, June 25<sup>th</sup> 1873. —

Time	Bar.	Air	Water	Deep do	Wind
6 A.M.	30.07	46°	44°	42°	Calm
12 M.	30.11	56			N.N.E. Lt
6 P.M.	30.13	48	46		Calm

Early in the day, sky covered with broken clouds. Attempt azimuth observations, which are interrupted by clouds, and the weather becomes thick. Wind very light.

— Thursday, June 26<sup>th</sup> —

Time	Bar.	Air	Water	Deep do	Wind
6 A.M.	30.21	46°	44°	42°	N.N.E. Lt
12 M.	30.26	56			N.E.,
6 P.M.	30.26	66	46		" "

Wind light, northerly. Weather thick & foggy. Obs. for magnetic dip by ordinary and Lloyds' Method A.M. and P.M. Late in P.M. sun comes out well and we get four sets of azimuth obs. the best yet obtained.

— Friday, June 27<sup>th</sup> —

Time	Bar.	Air	Water	Deep do	Wind
6 A.M.	30.22	48°	45°	43°	S. Lt
12 M.	30.24	51			N.N.W. Lt
4 P.M.	30.23	51	42		N.W.
8 "	30.22	45	42		"
12 "	30.23	44	43		"

Weigh anchor early in the morning, and stand out with a fair wind, but just before reaching the narrows take a back flaw and are obliged to wear and anchor again. About noon wind comes out of the N. W. strong, and we stand out to sea on our way to Kyska Island. The bearings outside the Harbor do not agree with the easterly variation given on the charts, but this variation appears to be more correct in the vicinity of Semichi Id. which we pass in the P.M. Weather half clear.

— Saturday, June 28<sup>th</sup> 1843. —

Time	Bar.	Air	Water	Wind
4	30.23	41°	42°	N. S. W.
8	30.28	42	43	"
12	30.26	44	42	N. W. S. W.
21	30.29	46	44	Calm
8	30.30	45	43	S. E.
12	30.34	42	42	"

Weather thick and foggy. Wind light, P.M. Calm. About 4 P.M. when in Lat.  $52^{\circ} 20'$  N. and Long. E. of Greenwich  $177^{\circ} 17'$  fourteen miles off the N. W. end of Kyska Id. take a deep sea sounding, as follows: attaching a Casella Thermometer to the line

17 fms above the lead — of which the indices read  $64.5$  and  $63.5$  respectively when passed over:

Let go at	3 h	55 m.	as sec.
1 <sup>st</sup> 100 fms run out	55	48	
2 <sup>d</sup> 100 " "	56	50	
3 <sup>d</sup> 100 " "	58	19	
4 <sup>th</sup> 100 " "	4	00	00
5 <sup>th</sup> 100 " "	02	09	
6 <sup>th</sup> 100 " "	04	12	
7 <sup>th</sup> 100 " "	06	22	
8 <sup>th</sup> 100 " "	09	37	
9 <sup>th</sup> 100 " (bottom about here)	12	24	
85 " "	15	11	

On hauling in the line the Stollwagen cup was found to be nearly full of fine chalky mud containing Globigerina and other minute foraminifera, corresponding to those found in the sea bed of the N. Atlantic. The indices of the thermometer had evidently been disturbed and shaken out of place by the inevitable jerks, which occur when hauling in by the jumping of the line on the concave surface of the drum of the winch. This usually occurs when the utmost care is used and the line hauled in by hand, so that I have but little confidence in any readings taken

under such circumstances. With the even strain of a steam-engine, reeling in on a cylindrical drum, better results may be obtained. While reeling in the line at 10 mins past 5 P.M. a sudden sharp report was heard, like the discharge of a large gun about five miles S.W. of us. There are no volcanoes in that direction and the report was sharper, and more cannon-like than the volcanic noises which we have frequently heard at Unalaska. There is no likelihood of any vessel having been in the vicinity and the occurrence seems inexplicable!

— Sunday, June 29<sup>th</sup> 1873. —

Time	Bar	Air	Water	Wind
4 a.m.	30.34	42°	42°	S.
8 "	30.36	44	42	S.S.W.
12 M.	30.37	47	42	"
6 P.M.	30.40	46	42	"

Wind moderate; weather foggy and rainy. Anchor in Kyska Harbor about 10 a.m. in 9 fms sandy mud. This is a noble harbor perfectly sheltered from all winds, except on the Southern & Eastern shores, where the outlying rocks forbid anchoring. It is of oval shape, sheltered by the broad Western end of Little Kyska,

from Easterly winds. The channel between Great and Little Kyska, to the South is so narrow and obstructed by rocky islets that no sea can reach the anchorage from this direction. The Western shore of the harbor is a broad sand beach behind which three valleys extend for some distance, in two of which are lakes of some size. Over the low water shed of the island by the middle valley, is a portage to a bay on the West coast of Great Kyska. A narrow defile from the head of the <sup>northern</sup> valley leads to a deep and narrow valley to the North of the promontory which forms the North head of the anchorage. This is nearly filled by a large and deep lake of brackish water, separated from the sea only by a low sand beach.

On the shores of this lake is strewn a large amount of drift-wood.

The rocks of which the island is principally composed about the harbor, are a coarse sand-stone, or fine conglomerate of volcanic material principally.

They are somewhat broken and contorted and overlaid in their higher parts by intruded porphyrite. Some portions of the sand shore, when metamorphosed, are

fine enough to resemble a coarse slate. This principally occurs in the vicinity of the eruptive rocks. There are no animals on the islands, but a good many sea-fowl and a few small land birds. Shell fish and other fish are very scarce except brook trout in the streams.

There is abundance of good water, but no timber except drift wood, and the rolling hills are covered with a thick growth of grass herbage and moss with a few berry bushes, and cranberry vines interspersed in it. The eatable *Archangetica* and *Gritallaria* are abundant. There are a house and some huts on the beach, occupied at times by hunting parties of Aleuts from the other islands. The only fur is the sea otter, though occasional sea lions are found here.

Monday, June 30<sup>th</sup> 1873.

Time	Bar.	Air	Surf. Water	Dep do	Wind
6 A.M.	30.39	44°	42°	41°	S.S.W
12 M.	30.30	55			N.E.
6 P.M.	30.20	47	42		"

Dense fog all day, broken by the sun for a short time at noon.

Spend the day setting up signals, but

The weather is too thick to permit of making out a description of them. One tripod signal on the No Head named Kyska signal - One on the sand bluff near the lake in the middle valley. N<sup>o</sup> End signal another 1362.553 m. distant S. 26 E forming the other end of the base line S<sup>o</sup> End signal. The latter 37.163 metres above the water; the former 12.97 metres above it. A fourth, bluff signal, on the edge of the high bluff on the S<sup>o</sup> side of the harbor and a fifth, bare signal, on the top of the sand stone bluff on the North side of the harbor, which at the water's edge is hollowed out into numerous shallow caves.

Tuesday, July 1<sup>st</sup> 1873.

Time	Bar.	Air	Surf. Water	Dep do	Wind
6 A.M.	30.02	43°	41°	41°	S.N.E
12 M.	29.92	50			N.E
6 P.M.	29.87	49	41		Variable

Dense fog all day; can see nothing a few rods off. Wind light and variable.

Wednesday, July 2<sup>nd</sup>.

Time	Bar.	Air	Surf. Water	Dep do	Wind
6 A.M.	29.76	45°	42°	42°	E.
12 M.	29.76	54			S.E.
6 P.M.	29.73	51	43		S.W.

Dense fog all day. Wind fresh in P.M.  
 Erect two more signals in the afternoon  
 one on the N.W. end of Little Kyska, Island  
 signal, and one on the S.E. end of the  
 Southern shore of Great Kyska, which  
 we call South Head signal.

Establish a station on the sand bluff  
 near the village for taking astronomical  
 and magnetic observations.

Thursday July 3<sup>rd</sup> 1873.

Time	Bar.	Air	Surf. Water	deep do	Wind
6 A.M.	29.87	46°	44°	42°	S.S.W.
12 M.	29.92	52			
6 P.M.	30.00	48	41		S.W.

Dense fog all day, lifting a little now  
 and then. P.M. measured base line  
 from S° End  $\Delta$  to N° End  $\Delta$  and run  
 the shore line between the two with  
 the telemeter.

Friday, July 4<sup>th</sup>

Time	Bar.	Air	Surf. Water	deep do	Wind
6 A.M.	30.15	44°	43°	42°	S.S.W.
12 M.	30.11	47			S.
6 P.M.	30.02	44	42		S.E.

Dense wet fog all day, with heavy  
 rain late in P.M. and high wind.

Saturday, July 5<sup>th</sup> 1873.

Time	Bar.	Air	Surf. Water	deep do	Wind
6 A.M.	29.95	45°	42°	41°	S.S.E.
12 M.	29.99	49			S.S.W.
6 P.M.	30.00	50	42		S.W.

Rain and heavy wet fog in A.M.  
 P.M. foggy and thick but less rain.  
 Send the boat out to obtain some fish  
 if possible; but they do not succeed in finding  
 any.

Sunday, July 6<sup>th</sup> 1873.

Time	Bar.	Air	Surf. Water	deep do	Wind
6 A.M.	30.09	44°	43°	42°	S.W.
12 M.	30.09	53			"
6 P.M.	30.06	49	42		S.S.E.

Day foggy & wet, wind strong.  
 In P.M. cross the divide between the head of the  
 harbor and a small bay on the other side  
 of the island. The ridge is not over 300 ft  
 high. The distance across is about two miles  
 & a half. The western bay is shoal and full  
 of rocks and rocky islets; the beach of sand  
 & rocks, with a good deal of drift wood on it.

Monday, July 7<sup>th</sup>

Time	Bar.	Air	Surf. Water	deep do	Wind
6 A.M.	29.89	44°	42°	42°	S.S.E.
12 M.	29.75	48			S.E.
6 P.M.	29.61	44	41		N.

Dense wet fog & fresh wind with rain.



Tuesday, July 8<sup>th</sup> 1873.

Time	Bar.	Air	Water	Deep do	Wind
6 am.	29.54	43°	41	42°	W
12 m.	29.54	52			S.W.
6 P.M.	29.53	44	41		W.S.W.

Strong wind with occasional squalls of fog + rain, succeeded by calmer intervals.

Use the last in A.M. in taking angles from North + South end  $\Delta$ s and in P.M. from Cave  $\Delta$ . Evening stormy.

Wednesday, July 9<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	29.51	44°	41°	42°	S.W.
12 m.	29.57	48			"
6 P.M.	29.59	46	41		"

Very strong wind; cloudy + rainy all day.

Thursday, July 10<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	29.70	45°	41°	42°	S.W.
12 m.	29.76	48			"
6 P.M.	29.79	46	41		"

Rains + blows furiously all day.

Friday, July 11<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	29.87	44°	41°	42°	S.W.
12 m.	29.89	47			"
6 P.M.	29.90	45	41		"

More moderate; rainy + windy all day.

Saturday, July 12<sup>th</sup> 1873.

Time	Bar.	Air	Water	Deep do	Wind
6 am.	30.01	45°	41°	42°	S.W.
12 m.	30.10	56			N.W.
6 P.M.	30.16	52	42		W.S.W.

Day half clear, wind fresh.

Run shore line on North side of harbor. Observations for time with vertical circle.

Sunday, July 13<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	30.26	45°	41°	42°	S.W.
12 m.	30.30	52			W.
6 P.M.	30.34	49	41		W.

Rainy + cloudy in A.M. Half clear in P.M. with fresh wind. Obs. for astronomical Azimuth in P.M.

Monday, July 14<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	30.54	44°	41°	42°	W.N.W.
12 m.	30.55	52			N.W.
6 P.M.	30.56	48	42		Calm

Day half cloudy. Wind light. Running shore line on South side of harbor, Circum-meridian Obs. and equal altitudes with Sextant A.M. + P.M.

Tuesday, July 15<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 a.m.	30.58	45°	41°	42°	S.E.
12 m.	30.57	47			"
6 P.M.	30.58	44	41		"

Tuesday, July 15<sup>th</sup> 1843. cont.

Day cloudy, with some fog + light wind.  
Run shore line + take angles on Little Kyska Id.

Wednesday, July 16<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	30.26	44°	41°	42°	S.E.
12 m.	30.20	48			S.S.E.
6 P.M.	30.13	48	42		S.

Day rainy with thick fog and light wind.  
P.M. Wind strong.

Thursday, July 17<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 a.m.	29.96	50°	42°	42°	S.W.
12 m.	29.91	50			S.S.W.
6 P.M.	29.77	50	42		or S.W.

A.M. Stormy with dense fog. P.M. same.

Friday, July 18<sup>th</sup> 1843.

Time	Bar.	Air	Water	Deep do	Wind
6 a.m.	29.61	49°	42°	42°	S.W.
12 m.	29.72	57			Variable
6 P.M.	29.84	53	42		"

A.M. Heavy wind squalls + fog. P.M. Partly foggy.  
Go ashore and run some shore line and take some observations for magnetic azimuth; interrupted by fog.

Saturday July 19<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 a.m.	30.03	57°	42	42°	Lt Variable
12 m.	30.20	64			S.
6 P.M.	30.30	59	44		Lt. Variable

Day commences with light variable winds, partly clear, but soon clouds over.  
Observations for time, interrupted by clouds.  
Spend day taking angles from various stations.

Sunday, July 20<sup>th</sup> 1843.

Time	Bar.	Air	Water	Deep do	Wind
6 a.m.	30.48	49°	42°	42°	S.
12 m.	30.44	54			S.W.
6 P.M.	30.38	51	42		W.

Storms hard all day. Evening see some stars for the second time since June 10<sup>th</sup>.

Monday, July 21<sup>st</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 a.m.	30.56	51°	43°	42°	Variable
12 m.	30.59	67			S.E.
6 P.M.	30.55	64	45		Variable

Day perfectly clear; calm or very light airs. a little fog on the horizon.

Tidal observations, soundings, astronomical azimuth and circum-meridian altitudes with the vertical circle, take up the day.

In P.M. Capt. Herenden goes to a peak in the middle of the North part of the island where he obtains some bearings on distant objects, islands &c, as follows:

- Reef (end), stretching towards Pillar Rock N. 54° W.
- Pillar N. 60° W. ? (or 62° W.)
- Bouldyr Id. (middle) N. 78° W.

N. edge Iron Id. N. 70 E.  
 S. " " N. 86 E.  
 S. " Little Sitkin Id. S. 88 E.  
 N. " Rat Id. S. 78 E.  
 N.E. corner Little Kyska Id }  
 S. edge Rat Id } in one line S. 75 E.  
 Small island off Little Kyska }  
 S. edge Amchitka Id. } S. 69 E.  
 Island Δ 60? S. 55 E.?  
 South Head Δ S. 41 E.  
 South End Δ S. 4 E. ~~W. 30 E.~~  
 Astronomical Δ S. 7 E. ~~W. 30 E.~~

A belt of low land with lakes, cuts across the island about a mile north of this peak, and between it and the high North Peak.

Tuesday July 22<sup>nd</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
6 a.m.	30.50	52°	44°	43°	Variable
12 M.	30.45	65			S.W.
6 P.M.	30.38	66	43		Variable

Morning somewhat foggy, nearly calm.  
 P.M. Wind fresh at intervals, foggy.  
 a.m. take observations for magnetic azimuth and dip. P.M. Tidal observations and sounding.

Wednesday, July 23<sup>rd</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
6 a.m.	30.36	52°	44	43°	S.
12 M.	30.35	56	43		"
4 P.M.	30.30	53	46		"
8 "	30.29	48	43		"
12 "	30.25	48	42		S.S.E

Day very foggy with light winds. Stand out of the harbor intending to pass between Little Kyska & Iron Id. but a head tide sets us back, so that we were obliged to pass to the North of the latter.

About noon the peak of Chrostoff Id (supposed) bore E. by S. and that of Iron Id S.E. by S. 1/2 S. (distant about 3 miles) by compass, the North edge of the latter at the same time bearing E. S. E. At noon get an observation for position, which shows that these islands are placed considerably too far to the North on the chart. At this time the North peak of Great Kyska Id. bore W. by S. magnetic.

The East slope of Iron Id. is long & even the ravines &c seemingly even filled with sand of a gray color. The North slope is abrupt & rocky. The West slopes down to a sandy bluff about 100 feet high. Spend the night packing about in Amchitka passage.

Thursday July 24<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
4 am.	30.20	45	42	-	S.S.E.
8 "	30.16	44	43	-	"
12 M.	30.08	52	43	-	"
6 P.M.	29.99	49	42	-	S.E.

Day densely foggy, wind fresh.

The fog lifts at times about noon and we make the coast of Anchitka and after standing in along shore we enter Constantine Harbor and anchor in 8 fms hard sandy bottom about 1 P.M.

Shortly after this the fog shuts in very thick with rain. This is a very good harbor except in N + N.E. winds, and during the prevalent Westerly + Southerly winds of summer may be advantageously used. The opening is wide enough for any vessel to beat in and there is abundance of water. A kelp patch with 5 fms water on it is in the middle of the outer part of the entrance. The shores are principally low bluffs with bold water but the head of the bay has a sandy beach and close in is shoal.

Two sites of old villages exist here; there is plenty of drift wood on the beach + abundance of fresh water. We caught abundance of cod + halibut near the entrance of the bay.

Friday, July 25<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
6 am.	30.00	46°	42	42°	S.W.
12 M.	30.00	52			"
6 P.M.	30.05	49	42		W.

Day foggy + cloudy, wind light. The boat goes out to sound on the kelp patch finding the least water at low tide to be five fms. She brings back a good supply of fish, the first cod + halibut of good quality obtained since leaving Unalaska.

Saturday July 26<sup>th</sup>

6 A.M.	30.18	45°	42	42°	S.W.
12 M.	30.24	52			S.
6 P.M.	30.29	48	42		S.W.

Day foggy + cloudy, wind light. P.M. Go ashore for time obs. but sun does not come out. — Sunday, July 27<sup>th</sup>

6 A.M.	30.32	48°	43	43°	S.W.
12 M.	30.39	62			W.
6 P.M.	30.45	62	44		S.

Foggy + calm. At noon the sun comes out now + then. Try for circummeridian altitudes with sextant and get a few tolerable ones, then attempt observations for time with poor success.

Monday, July 28<sup>th</sup> 1873.

Time	Bar	Air	Water	Deep do	Wind
6 am.	30.50	50°	43°	43°	S.
12 M.	30.51	54			"
6 P.M.	30.43	52	44		S.S.W.

Morning foggy & rainy, wind fresh. Evening rainy.

Tuesday, July 29<sup>th</sup>

6 am.	30.41	49°	43°	43°	S
12 M.	30.40	58			S.S.W.
6 P.M.	30.39	56	42		S.W.

Foggy with rain at times, wind squally. Evening rainy.

Take the large boat & run out of the harbor, beating up the N. coast of the island to examine Kirilloff Harbor. Do not find anything corresponding to the bay on the chart and go ashore at a low point, which is the most prominent one above Constantine Bay, and take the following bearings (magnetic):

East Cape of Amchitka	E. 5° S.
W. Head Constantine Bay	S. 65° E.
Small Id. in sight W of do	S. 48° E.
W. Head Kirilloff Harbor	S. 35° E.
Small Id. off W. end Amchitka	N. 54° W.
Low point N.W. " "	N. 62° W.

After taking tea return along shore and see the Cross & village of Kirilloff & go in to examine the locality. There is hardly any bay, the shelter is very poor,

no better than that afforded by a number of other bights between this and Constantine Harbor. The anchorage is exceedingly contracted, and only sufficient for the smallest vessels. The water is very shoal, not appearing to exceed two fathoms at any place, and close to the spot marked on the chart as the anchorage we found a ridge of rocks with about three feet of water on it. The tide was very low at the time of our visit.

It is incomprehensible, how, with as good a Harbor as that of Constantine, so near, any vessel should attempt to enter this rocky cove, which is under no circumstances to be recommended. It is about 3 1/2 miles from the N. head of Constantine Harbor.

The remains of the deserted village are very evident.

Return to the vessel, the rest of the party having obtained solar & magnetic azimuth during the P.M.

Wednesday, July 30<sup>th</sup>

Time	Bar.	Air	Water	Deep do	Wind
6 am.	30.32	50	42°	43°	S.
12 M.	30.26	58			S.S.W.
6 P.M.	30.24	54	43		"

Foggy & rainy. The sun looms through the fog occasionally, and in the P.M. attempt observations for time with the vertical circle, and get one altitude.

Wind fresh. Evening rainy.

A shock of earthquake followed by another lighter one, was felt this evening at 10<sup>h</sup> 54<sup>m</sup> 1/2. The interval was about three seconds.

Thursday, July 31<sup>st</sup> 1843.

Time	Bar.	Air	Water	Surf do.	Wind
6 am.	30.15	52	43	43°	S.
12 m.	30.13	54			"
6 P.M.	30.10	52	43		"

Rainy with strong wind & dense fog.

Friday, Aug. 1<sup>st</sup>

6 a.m.	29.95	50	43°	44°	S.
12 m.	29.92	52			"
6 P.M.	29.84	50	43		"

Rainy & stormy all day. Cross the Island and find a light full of rocks on the opposite side.

Saturday, Aug. 2<sup>nd</sup>

6 a.m.	29.79	50	43	44	S.
12 m.	29.84	49			"
6 P.M.	29.90	50	42		"

Wind fresh fog very thick.

Rains and storms all day.

Sunday, Aug. 3<sup>rd</sup> 1843.

Time	Bar.	Air	Water	Surf do.	Wind
6 am.	30.08	49	42	43°	S.
12 m.	30.10	52			S.E.
6 P.M.	30.11	51	42		S.S.E.

Wind more moderate. Rainy & stormy.

Monday, Aug. 4<sup>th</sup>

6 am.	30.26	50	42	42	Calm
12 m.	30.24	53			S.E.
6 P.M.	30.24	52	42		E.

Foggy, rains & blows all day.

Tuesday, Aug. 5<sup>th</sup>

6 am.	30.24	50	42	42	E.
12 m.	30.25	56			"
6 P.M.	30.26	54	42		"

Foggy rainy and stormy. P.M. Weather settles a little, but wind remains the same.

Wednesday, Aug. 6<sup>th</sup>

6 a.m.	30.34	52	42	43	E.
12 m.	30.32	59			"
4 P.M.	30.33	55	44		"
8 "	30.32	50	43		S.S.E.
12 "	30.30	48	45		"

Morning half clear with fresh wind, and streaks of fog constantly passing over. Observations for latitude, time & azimuth. These completed, stand out of the harbor about 1 P.M. when it shuts down thick, with very light winds.

Thursday, Aug. 7<sup>th</sup> 1843.

Time	Bar.	Air	Water	Wind
4 A.M.	30.29	49°	43°	S. S. E.
8 "	30.29	49	43	"
12 M.	30.29	54	46	"
4 P.M.	30.22	59	49	"
8 "	30.22	54	44	"
12 "	30.20	52	48	"

Morning cloudy & rainy, but clears off a good deal about noon. See Peak of Goreloi and N° peak of Tanaga, and get the following observations on them:

Goreloi bears	S. W. by S.	magnetic
N° Peak of Tanaga	S. E. by S. $\frac{1}{4}$ S.	"
Log reads 19 miles, course	S $\frac{1}{2}$ N.	"
Altitude of Goreloi	1° 35' 50"	
	1 35 50	
	1 36 30	
	1 36 0	
Altitude of Tanaga	4 48 40	
	4 48 0	
	4 50 10	

Tanaga bears an hour or two afterwards  $\frac{3}{4}$  S.  $\frac{1}{4}$  E.  $\frac{3}{4}$  N.  $\frac{1}{4}$  E.

Log reads 25  $\frac{1}{3}$  miles.

Index error of Sextant	Off arc	On arc
	29.30"	34.30"
	29.30	34.40
	29.10	34.30

These reduced give for Tanaga N° Peak

Continued

an approximate altitude of 7108 feet, and for Goreloi, assuming the correctness of its position on the U. S. Hydro. Office Chart about 5500 feet, which last seems too low, but the horizon being obscure, the observations afford room for doubt. It is probably higher, though not as high as once believed.

Friday, Aug. 8<sup>th</sup> 1843.

Time	Bar.	Air	Water	Wind
4 A.M.	30.20	51°	50°	S.
8 "	30.19	52	49	"
12 M.	30.15	54	44	"
6 P.M.	30.11	55	45	Calm.

Morning early thick fog and rain, with strong wind. Later the wind dies away and we spend most of the day beating into Adakh Straits with poor success. About 4 P.M. anchor in Chagakh Bay about a mile off shore in 14 fms sand. Foggy & calm.

Saturday, Aug. 9<sup>th</sup>

6 A.M.	30.05	50	45°	Calm
12 M.	30.05	50		W.
6 P.M.	30.10	56	44	W. N. W.

Light baffling airs and calm, with light rain. Temp. deep water 44°.

Take the large boat, 2<sup>d</sup> mate and three men and go down to the S<sup>o</sup> point of the bay to examine an opening there, which promised from a glimpse I had into it from the vessel while tacking yesterday to afford an anchorage. Go in and find that the point is part of an island, and behind it passing through a passage a quarter of a mile or more wide we come into a small bay enclosed by islands, where an anchorage may be had secure in all winds in 15 fms. hard bottom.

The soundings in the passage give 5 fms as the least water in a bed of kelp, which crosses the channel, and elsewhere it ranges from 9 to 18 fms.

There are several openings by which a vessel may reach the open strait, but none wide enough to admit a heavy sea. Return to vessel at noon. Capt. Herenden has examined the entrance to a large bay at the head of Chaqakh Bay, which seemed to offer a secure anchorage, but found only 9 feet of water on a bar which was across the entrance.

About 1 P.M. weigh anchor and proceed to the new anchorage behind the small islands.

Take the small boat after arriving & examine the ramifications of the bay, and find a large bay with several narrow entrances, but completely land-locked lying behind the islands. There is very deep water in this bay & several large streams fall into it. It is about 5 miles long & 2 miles wide.

———— Sunday, Aug. 10<sup>th</sup> 1843. ————

Time	Bar.	Air	Water	Dep do	Wind
6 Am.	30.19	47	43	45°	N.
12 M.	30.24	55			"
6 P.M.	30.29	50	44		"

Day foggy & cloudy. Wind fresh at intervals.

———— Monday, Aug. 11<sup>th</sup> ————

6 a.m.	30.40	50	45	45°	N.W.
12 M.	30.44	56			"
6 P.M.	30.46	52	43		"

Wind fresh; weather half clear with drifting clouds. Obs. for latitude, time & azimuth. Fill water and get ready for sea.

———— Tuesday, Aug. 12<sup>th</sup> ————

6 a.m.	30.45	56	48	44	Lt Variable
12 M.	30.40	62			"
6 P.M.	30.34	52	46		"

Day foggy with light winds & a little sun occasionally. Obs. for time in a.m. interrupted by fog.

P.M. Very thick fog.

———— Wednesday, Aug. 13<sup>th</sup> ————

6 a.m.	30.26	52	49	44	Balm
12 M.	30.24	56			Lt N.W.
4 P.M.	30.20	53	46		" N
6 "	30.20	51	49		" E.S.E.
12 "	30.20	51	50		" "

Morning foggy, with very light airs. About noon manage to work out of the harbor.



and stand out into the straits. Get obs. <sup>and</sup> cross bearings on the N<sup>o</sup> Peak of Adakh, making it approximately 5648 ft high which must be nearly correct.

Thursday, Augt. 14<sup>th</sup> 1843.

Time	Bar.	Air	Water	Wind
4 am.	30.19	50°	48°	Lt. E.S.E.
8 "	30.22	50	50	"
12 m.	30.23	54	51	"
4 P.M.	30.20	50	50	E.
8 "	30.19	49	50	Lt. Variable
12 "	30.18	49	50	"

Day foggy or cloudy. Wind moderate or light.

Friday, Augt. 15<sup>th</sup>

4 a.m.	30.18	48°	50°	Lt. Variable
8 "	30.20	48	50	Calm
12 m.	30.20	49	50	"
4 P.M.	30.19	48	50	Lt. N.E.
8 "	30.20	49	50	"
12 "	30.21	48	46	"

Day cloudy, nearly calm.

About 9 a.m. being in Lat. 52° 19' N. & Long. 175° 23' W. take a deep sound.

Time	Run out	Time occupied in running out 50 fms.
8h. 52' 0"	Let go	
52 25	50 fms	25 sec.
52 55	50 "	30 "
53 28	50 "	33 "

8h. 54' 07"	50 fms	39 sec.
54 48	50 "	41 "
55 35	50 "	47 "
56 22	50 "	47 "
57 13	50 "	51 "
58 09	50 "	56 "
59 07	50 "	58 "
9h. 0 04	50 "	57 "
01 03	50 "	59 "
02 04	50 "	61 "
03 08	50 "	64 "
04 53	50 "	105 "

750 " 12 mins. 53 sec.

Bottom about 700 fms. Lead came up clean. Kasatochi Id. bore S. by W. Koniuzhi Id. bore E. by S.  $\frac{1}{2}$  S. magnetic. Later calm.

Saturday, Augt. 16<sup>th</sup> 1843.

Time	Bar.	Air	Water	Wind
4 a.m.	30.20	48°	46°	Calm
8 "	30.20	47	46	"
12 m.	30.18	49	45	"
4 P.M.	30.13	50	48	"
8 "	30.13	48	48	"
12 "	30.12	49	48	Lt. S.

Dead calm with fog all day, until late in evening, with a heavy swell from the N.E. Some furl sails to obviate the slatting.

Sunday, Augt. 17<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 am.	30.10	48	50	St. S.
8 "	30.10	46	48	S.
12 M.	30.10	48	48	"
6 P.M.	30.09	50	46	"

Wind light and unfavorable. Spend the entire day beating into Atka Harbor, Hazan Bay. There is a settlement and trading post of the Alaska Com. Co. at this place, and the agent came out to meet us in a skin canoe. There is also a small settlement in the strait between Amliia and Atka on the Amliia shore, and another at the old Russian Station on Korovin's Bay on the West side of the island. There are in all about 334 natives in these villages. Those which we saw were less comfortably clothed and less neat in their persons, than those at any of the other stations we have visited. The harbor is small with shelter from all winds, only a little swell heaving in during Northeasters. From the high land to the S. & W. heavy squalls come down, with southwest gales. The anchorage is in eleven fms sticky mud, good holding ground. Further in it is however said to be

Continued.

not so good. The shores are mostly rocky and the shelter is formed by many small islets. The ground was covered with a rank growth of grass & herbage. No vegetables are cultivated here, though appearances would indicate that they would do well, if properly attended to.

North of the harbor is a broad sand beach. In the village there are six houses of sawed lumber and a number of huts.

The tides rise and fall from four to six feet. There is no establishment.

Codfish and herring and a large kind of salmon and several sorts of shellfish are abundant on the west side of the island.

Many whales were seen in the bay. Coal is said to exist on the South side of the island and on Korovin's Bay, where there are also hot springs near the Klucheffskaia Volcano, where a resort for invalids was established by the Russians.

Sulphur, alum and several kinds of clay or bole are obtained in the vicinity of the volcanoes.

Anchor about 6 P.M.

Monday, Aug. 18<sup>th</sup> 1873.

Time	Bar.	Air	Water	Surf	Wind
6 am.	30.07	51	49°	45°	S.
12 m.	30.07	60			"
6 P.M.	30.06	53	44		"

Rainy and foggy. Wind fresh with squalls.

Tuesday, Aug. 19<sup>th</sup>

Time	Bar.	Air	Water	Surf	Wind
6 am.	30.07	52	46°	45°	S.E.
12 m.	29.97	56			S.S.E.
6 P.M.	29.94	52	45		E.

Rainy & stormy all day.

Wednesday, Aug. 20<sup>th</sup>

Time	Bar.	Air	Water	Surf	Wind
6 am.	29.90	49	47°	44°	N.E.
12 m.	29.94	56			E.
6 P.M.	30.00	51	47		S.E.

Rainy & stormy all day. Work over sketches and clerical work.

Thursday, Aug. 21<sup>st</sup>

Time	Bar.	Air	Water	Surf	Wind
6 am.	30.22	50	46°	44°	S.E.
12 m.	30.26	56			"
6 P.M.	30.26	52	45		"

Foggy & rainy with occasional squalls, and glimpses of clear sky toward evening.

Friday, Aug. 22<sup>nd</sup>

Time	Bar.	Air	Water	Surf	Wind
6 a.m.	30.22	50	46°	44°	S.E.
12 m.	30.14	62			S.
6 P.M.	30.09	58	49		S.S.W.

Foggy & rainy with squalls, wh. are particularly heavy in the evening.

Saturday, Aug. 23<sup>rd</sup> 1873.

Time	Bar.	Air	Water	Surf	Wind
6 am.	30.09	56	46°	43°	S.E.
12 m.	30.08	62			S.S.E.
6 P.M.	30.07	58	46		S.

Foggy & rainy. Wind light in a.m. P.M. with heavy squalls.

Sunday, Aug. 24<sup>th</sup>

Time	Bar.	Air	Water	Surf	Wind
6 am.	30.10	57	47°	43°	S
12 m.	30.23	64			W.
6 P.M.	30.36	60	47		"

Morning cloudy afterwards partly clear. Wind moderate. Evening foggy. Observations for azimuth interrupted by clouds. Astronomical Station about 20 ft N.E. of the Church on a slight elevation. Flag signal observed on, on a small island in the narrow passage at the South head of the harbor. The signal was placed on the middle of the top of this islet, which is very small and high, shaped like a jockey cap, or old fashioned fountain inkstand, and easily recognized. P.M. Nearly clear. Obs. for azimuth 4 times.

Monday, Aug. 25<sup>th</sup>

Time	Bar.	Air	Water	Surf	Wind
6 am.	30.48	53	47°	44°	Calm
12 m.	30.50	60			W.
6 P.M.	30.50	54	47		"

Day foggy and wet with light winds.

Take a bidarka and cross the portage to examine the old anchorage at Korovin's Bay. On our way over visit the hot springs on the slope of Klucheffskaia Volcano.

These springs contain sulphur, lime & alum. They have a temperature of 164° F. and the water deposits a variety of red, blue and white clays about the orifices of the geysers. The body of water issuing is not large and seems to be diminishing.

The Russians formerly had a bathhouse & retreat for invalids here, but the great distance from the shore (about 5 miles) and the very fatiguing climb up to reach the plateau on which the springs are situated render them difficult of access for persons in a weak condition. They are reached from the head of a long bay making up from the old harbor, where a large spring stream enters in which is a great abundance of salmon. This bay is very shoal, its bottom and shores stony and the depth of water rarely exceeding one fathom.

Reaching the settlement towards evening I found that the spits which enclose the bay formerly entered by vessels are composed of large boulders with a little sand on the outer face of the East

one, and the inner face of the Western one. Between the two there is a sand bar with three fathoms on it at high water and about two at ordinary low water.

The inner bay has become very shoal so that it is now inexpedient for vessels to enter, whereas formerly the company's brigs were able to make a good harbor to the N. & W. of the entrance. There are abundance of shellfish here, cod in their season, and halibut, but little driftwood. The inhabitants number about 100 souls. There are several good houses and a church rapidly falling into decay.

This settlement from the abundance of food, is much better suited to the requirements of the Aleuts, than that on Nagun Bay, but the harbor is no longer available, though Klinkofstrom Harbor on the other side of Korovin's Bay is said to be well protected.

— Tuesday, Augt. 26<sup>th</sup> 1873. —

Time	Bar.	Air	Water	Deep do.	Wind
6 am.	30.50	52	47	44	S.W.
12 M.	30.44	62			N.S.W.
6 P.M.	30.41	60	48		W.

Day cloudy with clear sky occasionally. Foggy in P.M. Observations for latitude un-

successful on account of clouds. Cross Korovin's Bay in the skin canoe to Klinkofstrom Harbor, a small bay making in from the <sup>S.E.</sup> extremity of the larger one.

Here complete protection is had from all winds in 11 fms hard sand.

This anchorage was first used by Capt Martin Klinkofstrom, then of the Russian American Company's Marine Service, and since by others. The above name was applied to it by the Russians.

Coal was reported in the bluff forming the N.E. head of this harbor, but on examination only drift fragments of lignite and silicified wood, of no value for economical purposes were found, and it is quite certain that no well defined bed, even of this material, exists in this locality.

After examining this locality, return to Nazan Bay & get ready for sea.

Wednesday, Aug. 27<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
6 AM	30.11	59°	48°	43°	S.W.
12 M.	30.01	60			"
4 P.M.	29.96	60	50		S.S.W.
8 "	29.90	53	46		"
12 "	29.90	50	45		W.

Day half cloudy with light wind in A.M. clearer with fresh westerly winds in P.M. About noon weigh anchor, and stand out of Nazan Bay to the Eastward, finding a very heavy N.W. ground swell off shore.

Thursday, Aug. 28<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
4 AM	29.85	50°	45°		N.S.W.
8 "	29.84	49	48		"
12 M.	30.04	52	42		"
4 P.M.	30.10	54	44		N.W.
8 "	30.18	58	44		S.S.W.
12 "	30.20	58	43		"

Day partly clear with fresh winds & heavy groundswell. Fog squalls passing over from the N.W. in rapid succession.

Make the most Northern of the group of islands, known as the "Four Craters". It is a very sharp and irregular island four or five miles long, from N. to S. <sup>2<sup>nd</sup></sup> about half as wide, without bays or anchorages. It is separated from the island next S.E. of it by a strait not over three miles wide & further narrowed by a reef extending high above water, N.W. from the latter island about half a mile.

There is a rocky pillar off the N.W.

end of the first island, but no outlying reefs were observed.

The second island is mountainous but not so rugged as the first.

It extends in nearly a N. + S. direction and may be eight miles long + five wide, or less. The peaks were foggy but apparently from two to three thousand feet high + volcanic.

Around the North point of this island the East shore is rocky with a prominent point making out. South of which is a bight with low land + a stream behind it, and a shingle beach on which a landing might be made in fair weather. There was a good deal of driftwood on this beach.

The Southeast end of this island is a moderately high broken rocky point with precipitous sides.

A larger island supposed to be Kamagil of the charts is separated from the one just spoken of by a strait running in an E. + W. direction, five miles or more in width, at the Western end of which appears to be another island. The third mentioned to the South of the strait is larger

than any of the others, and the North coast may have been twelve miles in length terminating to the Westward in a long low, narrow point. Between this and the N. E. end is another low point behind which is probably situated the anchorage spoken of by the natives.

A heavy swell and strong N. W. wind blowing straight in however, forbade our entering to examine this locality.

The shores of these islands appeared to be formed of volcanic breccia + metamorphic slates overlaid by layers of volcanic ash + buff.

Coasted round the North + East shores of the group, but finding no safe anchorage or landing place, we were reluctantly obliged to give up the idea of obtaining an azimuth of this place, as the lateness of the season and character of the weather gave us little to hope for, even if we lay off and on for a week or two.

The islands present no resemblance whatever to the representation of them on <sup>the</sup> Tenkoff's and the U.S. Hydrographic charts and the differences are irreconcilable. The older charts of Sarycheff and the Russian Hydrographic office are

perhaps a very little better, but still exceedingly incorrect and it would appear to be the only method of obtaining an approximate chart, to take an opportunity of landing a party on them in the fair weather of the spring, and leave them there during the summer unless a harbor should be discovered somewhere which would afford good protection, and this does not from our observations appear very likely.

Friday, Aug. 29<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 A.M.	30.21	49°	44°	W.
8 "	30.29	48	46	"
12 M.	30.30	48	48	"
4 P.M.	30.39	52	49	"
8 "	30.40	46	46	N.
12 "	30.42	45	45	"

Day half clear with light airs from the Northward, and the still continued heavy ground swell from the N. & W.

P.M. Nearly calm.

Came up with the volcanic island of Bogoslov, or "St John the Theologian".

At noon being in Lat. 53° 49' 52" N. the island bore N. by E. by compass about ten miles distant.

Later in the day the North edge of Unalaska bearing N. E. by E.  $\frac{1}{2}$  E. magnetic and the North shore of Makuskin Bay E. sounded with 200 fms; finding no bottom and being directly on the line of the supposed reef, replaced the lead with a heavier one and sounded again in nearly the same locality, with 100 fms line, again obtaining no bottom. The following bearings & altitudes were taken at the same time:

A, Ship Rock	N. by N $\frac{3}{4}$ W.	Alts Bogoslov
B, N. edge Bogoslov	N. by N $\frac{1}{2}$ W.	1° 43' 0"
C, E. " "	N. by W.	1 44 0
A-b measures	4° 58' 10"	1 45 0
B-b	3° 21' 55"	1 43 0
Reef E. of island bears	N.	Index Car. 3' 18"
Ship Rock on with <sup>N.</sup> edge of Bogoslov, bears	N. N. W $\frac{1}{2}$ W. <sup>3/4</sup> W.	
and on with E. " " "	N. W. by W $\frac{1}{2}$ W. "	

In the latter case the altitudes were as follows:

1° 18' 30"	On Arc - Index Car.	Off Arc
1 19 20	35' 20"	28' 20"
1 20 0	35 30	28 50
1 19 0	35 10	28 20

A little later Bogoslov bearing N. N. W. (the axis of the island & of the reef, if it existed) sound again with 250 fathoms & no bottom, a good straight sound. North coast of

Unalaska bearing N. E. by E.  $\frac{1}{2}$  E. and altitudes  $1^{\circ} 16' 0''$   $\frac{3}{4}$   $1^{\circ} 16' 20''$ .

From these data we gather the position of the island to be approximately  $53^{\circ} 58' N.$  Lat.  $164^{\circ} 33' 30'' W.$  Long.  $W.$  and to have an altitude of between 1859 + 829 feet. The reef may be considered ~~as~~ exploded. A man stationed at the masthead with clear weather and a very heavy swell running, could distinguish no breakers except those immediately around the island the vessel being run as nearly as possible along the line of the supposed reef for some ten or twelve miles.

This remarkable island presented the appearance of a perfectly bare and extremely rugged + precipitous rock of a pinkish clay color, and without an indication of stratification.

Its axis extends in a N. N. W. (magn.) direction and is essentially a sharp ridge about half as high as long, bristling with pinnacles and ragged projections and scored with narrow gullies worn by the weather. It appeared that it would not be possible to reach the summit or even to ascend it for any distance. The pinnacles are disposed in three

principal groups, of which the middle is the most elevated, and the Northern the most acute. There appeared to be little or no beach or landing place except the talus of broken rock near the S. E. end, and most of the shore was precipitous. "Ship Rock" is a perpendicular square topped pillar about half the length of the island, North + West of the North end of the island. There is a small rock half a mile N. + E. of the island, which rises but a few feet above the water, and on all sides (except the West) and especially to the S. E. of the island breakers here + there were observed, extending less than three quarters of a mile from the shore. The rocks of Bogoslov appear to have a general cleavage plane of  $60^{\circ}$  in a N. S. W. direction.

There is no crater, nor appearance of a cone. There is no water on it, and it is inhabited by a vast number of birds + a few sea lions. The heavy swell breaking many feet high on the precipitous shores, forbid the idea of a landing, and the weather gave us no hope of getting satisfactory observations on or about the island, so we reluctantly headed the vessel for Unalaska.



The island is evidently smaller & lower than the plan given of it by Sarycheff and his soundings appear quite unreliable.

The position differs on all the maps. Even <sup>Li</sup>Sebenkoff's two charts of the same date Nos XXII<sup>a</sup> & XXIV give slightly different positions and one indicates the supposed reefs while the other omits it.

The Russian Admiralty Charts as usual appear more accurate in regard to the position than the later ones of <sup>Li</sup>Sebenkoff.

The island is more to the North & East than any of the charts place it, according to our rather limited observations, which last were interfered with by the surge & current.

I may note here that when in Atka the foreman of the native hunting parties, came in from the East end of Anlia, where he had been hunting sea-lions, and on enquiring in regard to the high rock said to exist to the North of this part of the island, but disputed by Krusenstern, he stated that there was no such rock there, but there was a patch in the locality indicated with five to ten fathoms <sup>water</sup> on it, where in very heavy Northern storms

breakers were visible. The rock may have sunk, or been broken away since the time it was originally reported.

Yesterday P.M. we obtained a bearing and altitude on the Vsevidoff Volcano which if we had not been materially set out of our course by the current would give it a height of 8868 feet.

It is probably lower but nevertheless is one of the highest in the whole group of islands, and from its appearance I should say it was only second to Shishaldin.

Saturday, Augt. 30<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	30.50	44	45	N.
8 "	30.52	46	47	"
12 M.	30.55	50	50	"
4 P.M.	30.50	55	49	"
8 "	30.42	49	47	"
12 "	30.32	48	48	"

Day half clear, wind very light. The same annoying heavy smell continuing P.M. when two miles North of Cape Cheerful, the most Northern point of Unalaska, sound in 60 fms fine black gravel. The shallow plateau of Bering Sea first touches with its

Western border, the Aleutian chain in this vicinity and continues hence Eastward to the Mainland.

In P.M. the horizon being unusually clear we see all the peaks of Unimak including Shishaldin, which last is 106 miles away. Obtaining the mean of a large series of altitudes, and getting the distance more accurately by the difference of astronomical positions, we obtain a height for it of 8683 ft which differs only 72 ft from the elevation given by Schenkoff.

Speak the Sch. "Hutchinson" bound for the Western islands.

After dark a strong S.E. breeze with squalls springs up and we lay off and on near the mouth of Unalaska Harbor, waiting for daylight to be taken.

Sunday, Aug. 31<sup>st</sup> 1873.

Time	Bar.	Air	Water	Wind
4 A.M.	30.15	50°	47°	S.S.W.
8 "	29.94	50	45	S.W.
12 M.	29.61	52	46	"
6 P.M.	29.55	54	46	"

Day rainy, squally & stormy. Beat into the small harbor about 5 am. and anchor in 10 fathoms mud dy bottom.

Monday, Sept. 1<sup>st</sup> 1873.

Time	Bar	Air	Water	Dep ds.	Wind
6 am.	29.65	50	46	45	N.S.W.
12 M.	29.90	56			N.N.W.
6 P.M.	30.02	50	47		S.

Day cloudy & squally. P.M. Comes out a little sun. Attempt obs. for time with sextant, which are interrupted by high wind & clouds.

Tuesday, Sept. 2<sup>nd</sup>

Time	Bar	Air	Water	Dep ds.	Wind
6 am.	30.12	47	45	45	S.
12 M.	30.04	53			S.W.
6 P.M.	29.95	50	46		S.

Day calmer & cloudy. A little sun in early A.M. but obs. for time with Vert. Circle are frustrated by clouds.

Wednesday, Sept. 3<sup>rd</sup>

Time	Bar	Air	Water	Dep ds.	Wind
6 a.m.	29.30	52	46	45	Calm
12 M.	29.23	57			N.S.W.
6 P.M.	29.13	48	45		Br.

Morning cloudy with heavy rain. P.M. Squally. Evening strong blow from N. ward with rain and squalls.

Thursday, Sept. 4<sup>th</sup>

Time	Bar	Air	Water	Dep ds.	Wind
6 am.	29.58	43	45	44	N.
12 M.	29.70	45			N.N.W.
6 P.M.	29.84	44	45		N.W.

Rains and storms all day.

Friday, Sept. 5<sup>th</sup> 1873.

Time	Bar.	Air	Water	Deep ds	Wind
6 am	29.95	45°	44°	44°	N.
12 M	29.89	54			E.
6 P.M	29.76	50	46		S.

Cloudy, winds light. Later, fresh. Erect a new signal "Swinoi" on Hog Island Captain's Bay; but the wind becomes very fresh and we are obliged to leave in a hurry. The signal is on the edge of the bluff, near the North end of the island, and is one of the tripod kind like Liden Δ.

Saturday, Sept 6<sup>th</sup> 1873.

6 am.	29.40	47	46°	44°	S.E.
12 M.	29.32	50			Mod.
6 P.M.	29.30	54	47		E.

Wind light; rainy all day.

Sunday, Sept. 7<sup>th</sup>

6 am.	29.40	47	46°	44°	S.W.
12 M.	29.43	54			
6 P.M.	29.50	51	47		S.

Morning partly clear. Take obs. for time with Vert. Circle

Monday Sept. 8<sup>th</sup>

6 am.	29.65	49	46°	44°	Calm
12 M.	29.69	53			E.
6 P.M.	29.61	52	47		Lt. Variable

Morning perfectly clear & calm. Obs. for time with Vertical Circle & azimuth with Theod. No 97.

Continued.

Noon clouds over with light E. wind. P.M. Angles from Keystone Δ.

Tuesday, Sept. 9<sup>th</sup> 1873.

Time	Bar.	Air	Water	Deep ds	Wind
6 am.	29.45	47	46°	44°	Lt Baffling
12 M.	29.45	52			N.W.
6 P.M.	29.48	48	47		N.S.W.

Slow steady rain all day. Wind moderate.

Wednesday, Sept 10<sup>th</sup>

6 am.	29.58	48°	46°	44°	N.S.W.
12 M.	29.60	50			N.
6 P.M.	29.58	49	47		S.W.

Cloudy, wind moderate. Angles all day from No Head & Round Top Δ.

Thursday, Sept. 11<sup>th</sup>

6 am.	29.58	46°	46°	44°	N.S.W.
12 M.	29.62	51			Lt Variable
6 P.M.	29.63	50	47		S.

Morning cloudy, wind very light & a few drops of rain. Go to Hog Id. and spend the day there, taking angles and running shore line.

Friday, Sept. 12<sup>th</sup>

6 am.	29.82	50°	47°	44°	Calm
12 M.	29.86	58			N.W.
6 P.M.	29.95	52	48		N.

Cloudy with light wind in A.M. and fresh in P.M. Some fog in P.M.

Continued

Angles from Eider  $\Delta$ . Ascend the Igognak Volcano (extinct) with sailing-master Herenden but the fog interferes and frustrates our proposed observations for the altitude & position of the crater. The cone is principally of red and black scoriae and is quite steep. The crater is about two hundred feet deep with a small lake at the bottom.

Saturday, Sept. 13<sup>th</sup> 1873.

Time	Bar.	Air	Water	Depths	Wind
6 am.	30.12	49	47	44	Lt Variable
12 M.	30.14	57			S.
6 P.M.	30.10	49	48		S.E.

Morning half clear, calm. Obs. for azimuth in A.M. & P.M. Angles from stations on Hog Id.

Sunday, Sept. 14<sup>th</sup>

6 am.	29.86	53	47	44	S.W.
12 M.	29.88	56			"
6 P.M.	29.92	54	48		S.E.

Cloudy, wind moderate and variable.

Monday, Sept. 15<sup>th</sup>

6 am.	29.89	49	47	44	Calm
12 M.	29.80	50			N.
6 P.M.	29.80	48	47		N.

Wind light. A met fog continues all day.

Tuesday, Sept. 16<sup>th</sup> 1873.

Time	Bar.	Air	Water	Depths	Wind
6 am.	29.90	46	46	44 $\frac{1}{2}$	S.W.
12 M.	29.98	55			"
6 P.M.	30.10	50	47		Calm.

Morning fresh S. wind and broken clouds. Observations for azimuth. Later cloudy with rain squalls. Evening clears off calm, and we take obs. for azimuth on the pole-star.

Wednesday, Sept. 17<sup>th</sup>

6 am.	30.29	43	45	44 $\frac{1}{2}$	E
12 M.	30.23	53			S.E.
6 P.M.	30.22	50	47		S.S.E.

Cloudy; light Easterly winds. Angles between the signal used for azimuth with Polaris, and the church on Spola, and magnetic azimuth of the latter.

P.M. Wind fresher. G. to Hog Id. in the large boat and finish up the angles from Shvinsid  $\Delta$  and the shore line of the island.

Thursday, Sept. 18<sup>th</sup>

6 a.m.	30.14	45	46	44 $\frac{1}{2}$	N.E.
12 M.	30.19	54			N.
6 P.M.	30.20	49	47		Lt Variable

Cloudy, early a.m. wind light; later very strong. Obs. for magnetic azimuth. 5 P.M. Bark "Cyane", 32 days from San Francisco arrives with our first and only mail this season.

Friday, Sept. 19<sup>th</sup> 1873

Time	Bar	Air	Water	Surf	Wind
6 am.	30.22	46°	47°	44½	Calm
12 m.	30.18	54			N.
6 P.M.	30.15	49	47		"

Cloudy, wind moderate. Obs for magnetic azimuth continued.

Saturday, Sept. 20<sup>th</sup>

6 am.	30.10	45°	46°	44½	N.
12 m.	30.12	51			"
6 P.M.	30.10	49	47		"

Cloudy, wind fresh. Obs. for time interrupted by wind and clouds.

Sunday, Sept. 21<sup>st</sup>

6 am.	30.20	44°	45°	44½	N.
12 m.	30.21	51			N.N.W.
6 P.M.	30.24	48	45		"

Cloudy, wind light.

Monday, Sept. 22<sup>nd</sup>

6 am.	30.30	45°	45°	44½	N.
12 m.	30.30	51			S.
6 P.M.	30.26	54	48		"

Day half clear, wind fresh in squalls. P.M. Calmer. Obs for time with vertical circle.

Tuesday, Sept. 23<sup>rd</sup>

6 am.	30.02	42	45	44½	S.E.
12 m.	29.53	50			S.
6 P.M.	29.34	52	48		S.E.

continued.

Stormy, an old-fashioned south-easter.

Wednesday, Sept. 24<sup>th</sup> 1873

Time	Bar.	Air	Water	Surf	Wind
6 am.	29.79	49°	47°	45°	S.S.E.
12 m.	29.82	53			Lt. Variable
6 P.M.	29.82	51	48		"

Rainy & cloudy. Wind moderate.

Thursday, Sept. 25<sup>th</sup>

6 am.	29.94	48°	47°	44½	Calm
12 m.	30.01	54			"
4 P.M.	29.95	56	46		Lt. Variable
6 "	29.90	51	46		S.
12 "	29.80	50	46		"

Cloudy, wind very light. Sail for the Thumagin Islands about noon.

Friday, Sept. 26<sup>th</sup>

4 am.	29.68	49°	47°		S.W.
8 "	29.55	49	46		"
12 m.	29.55	50	46		"
4 P.M.	29.59	50	46		W.
8 "	29.60	49	47		S.
12 "	29.56	49	46		S.E.

Cloudy, wind light & variable.

Saturday, Sept. 27<sup>th</sup>

4 am.	29.45	49°	46°		S.
8 "	29.32	49	46		"
12 m.	29.18	50	47		"
4 P.M.	29.06	49	46		N.E.
8 "	28.99	49	47		S.N.E.
12 "	28.90	49	46		"

continued.

Cloudy with strong head wind & bad sea. Stand to the Northward to avoid it.

Sunday, Sept. 28<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	28.76	49°	47°	S.W.E.
8 "	29.10	47	46	S.S.E.
12 M.	29.22	50	47	"
4 P.M.	29.26	50	47	E.
6 "	29.23	48	48	"
12 "	29.18	47	47	"

Cloudy, half a gale of wind blowing with bad sea. Reefed or laying to nearly all day.

Monday, Sept. 29<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 AM.	29.04	47°	47°	E.
8 "	28.58	47	47	"
12 M.	28.58	49	47	"
4 P.M.	29.02	49	46	S.E.
6 "	29.08	49	47	E.
12 "	29.08	48	47	"

Cloudy with squalls, high sea running. Laying to all day.

Tuesday, Sept. 30<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 AM.	29.05	46°	47°	E.
8 "	29.03	45	47	"
12 M.	29.06	46	46	"
4 P.M.	29.10	48	46	S.E.
8 "	29.19	48	47	"
12 "	29.23	47	47	"

continued.

Light adverse winds all day. Cloudy with occasional rain. Open new notebook (No 2) tomorrow.

Wednesday, Oct. 1<sup>st</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	29.22	47°	47°	S.E.
8 "	29.22	45	45	N.E.
12 M.	29.23	46	47	"
4 P.M.	29.20	48	46	S.W.E.
8 "	29.19	47	45	"
12 "	29.18	46	46	S.

Wind light with rain. See Unalaska in P.M.

Thursday, Oct. 2<sup>nd</sup>

Time	Bar.	Air	Water	Wind
4 AM.	29.18	46°	45°	N.S.W.
8 "	29.25	45	45	N.
12 M.	29.25	46	45	"
4 P.M.	29.23	48	47	"
8 "	29.21	48	48	S.W.E.
12 "	29.14	47	48	"

Wind light, cloudy. About noon manage to work through the Akutan Pass and stand to the Southward. Weather better but barometer very low.

Friday, Oct. 3<sup>rd</sup>

Time	Bar.	Air	Water	Wind
4 AM.	28.99	47°	47°	N.
8 "	28.95	47	46	"
12 M.	28.93	48	49	"
4 P.M.	28.93	47	49	"
8 "	28.91	47	48	"
12 "	28.85	47	48	N.N.W.

— continued. —

Day with fresh wind, bad sea and more or less rain. Under reefs.

Saturday, Oct. 4<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	28.78	47	49°	N.W.
8 "	28.69	48	49	"
12 M.	28.68	48	49	"
4 P.M.	28.69	48	49	N.N.W.
8 "	28.69	48	48	"
12 "	28.72	47	48	"

Blowing hard all day with rain & squalls. Making slow head way under double reefs.

Sunday, Oct. 5<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 AM.	28.78	47°	48°	N.N.W.
8 "	28.85	47	49	"
12 M.	28.92	47	48	"
6 P.M.	28.95	45	47	"

Wind very strong. Day cloudy with rain & squalls. We raise the Shumagins early in the morning, and getting under the lee of the land, we enabled to work up Popoff Straits, and about half past twelve anchor in 8 fathoms in our old location in Humboldt Harbor. Catch a good many cod fish after anchoring.

Monday, Oct. 6<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep do	Wind
6 A.M.	29.08	44	47	48°	N.N.W.
12 M.	29.14	48			"
6 P.M.	29.16	45	48		N.W.

Day half clear with strong breezes from W. Observations for azimuth, magnetic & astrond with theod. No. 97 & latitude with vertical circle at Sandpoint Station. Object observed upon for azimuth is "hill" station of our triangulation of last year. The signals on Range Island & Sandpoint have been removed by some one, probably stolen for the lumber contained in them. But the position of the signal at Sandpoint was readily found by means of a stake driven last year to indicate the excentric station, and "hill" station being difficult of access had not been disturbed. Drove a heavy stake to be covered when we are done observing to mark center of station.

Tuesday, Oct. 7<sup>th</sup> 1873.

6 A.M.	29.13	38°	47	48	N.
12 M.	29.21	53			W.
6 P.M.	29.28	49	47		N.N.W.

Nearly clear with moderate wind in early a.m. Late strong in puffs. Obs. at Sandpoint for astrond & magnet azimuth with theod. No. 97. Time & latitude with sextant & artificial horizon.

Wednesday, Oct. 8<sup>th</sup> 1873.

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.52	39°	47°	47½°	W.S.W.
12 m.	29.54	44			S.
6 P.M.	29.44	41	48		W.

Strong squally westerly wind with rain at intervals all day. P.M. Stormy.

Thursday, Oct. 9<sup>th</sup>

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.36	38°	48°	47½°	S.W.
12 m.	29.54	40			W.
6 P.M.	29.66	39	48		N.W.

Stormy with heavy snow squalls all day.

Friday, Oct. 10<sup>th</sup>

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.80	33°	46°	47°	N.N.W.
12 m.	29.99	48			"
6 P.M.	29.92	43	48		N.W.

Day half clear. Wind rather fresh. Obs. for Astron & magnetic azimuth with theod. No. 97 somewhat interfered with by strong wind.

Saturday, Oct. 11<sup>th</sup>

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.89	40°	46°	47°	N.N.W.
12 m.	29.90	58			S.W.
6 P.M.	29.99	42	47		S.

Morning clear with very strong wind. P.M. wind shifts to the Southward with rain and squalls.

Sunday, Oct. 12<sup>th</sup> 1873.

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.70	47°	47°	47°	S.E.
12 m.	29.34	50			"
6 P.M.	29.28	48	48		S.W.

Stormy all day with severe squalls, rain and very strong variable wind.

Monday, Oct. 13<sup>th</sup>

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.38	42°	48°	47°	S.W.
12 m.	29.47	48			W.S.W.
6 P.M.	29.59	47	48		W.

Cloudy. Wind moderate with rain.

Tuesday, Oct. 14<sup>th</sup>

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.74	42°	48°	47°	S.W.
12 m.	29.73	48			"
6 P.M.	29.73	40	47		N.S.W.

Snow, rain & strong wind. Get a letter from S. Shippen at Delaroff Harbor asking for assistance for himself, Cpt. Geo. Holder and the crew of the Sch "Stm Irelan", wrecked in the gale of Sunday on the Unqa shore. Send back letter offering them transportation to California.

Wednesday, Oct. 15<sup>th</sup>

Time	Bar.	Air	Water	Deep	Wind
6 a.m.	29.85	38°	47°	47°	S.
12 m.	29.64	44			S.E.
6 P.M.	29.23	42	48		E.



Continued

Rainy with half a gale blowing from the S. & E. in P.M. Capt. Holder arrives from the wreck in a bidarka and remains all night.

Thursday, Oct. 16<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep. d.	Wind
6 am	29.37	43°	48°	46½°	S
12 m.	29.48	44			
6 P.M.	29.43	39	48		S.S.W.

Rainy and stormy all day.

Friday, Oct. 17<sup>th</sup> 1873.

Time	Bar.	Air	Water	Dep. d.	Wind
6 am	29.52	43°	46°	46½°	N.S.W.
12 m.	29.68	60			N.
6 P.M.	29.79	47	48		"

Day clear with moderate Westerly wind. Obs. for magnetic and solar azimuth with theodolite; latitude & time with vertical circle at Sand point Δ.

9 P.M. Capt Holder, S. Shipster & four men arrive from wreck of Sch<sup>n</sup> "Wm Ireland" for passage down.

Saturday, Oct. 18<sup>th</sup>

Time	Bar.	Air	Water	Dep. d.	Wind
6 am	29.94	41°	45°	46½°	N.N.W.
12 m.	30.10	46	46		"
4 P.M.	30.20	46	46		N.W.
8 "	30.29	46	46		"
12 "	30.34	44	44		"

Day half clear with moderate Westerly wind.

Sail for San Francisco at 7 a.m. Sunday, Oct. 19<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 am	30.40	44°	47°	S.W.
8 "	30.41	44	47	"
12 m.	30.43	45	46	"
4 P.M.	30.40	45	47	S.
8 "	30.37	44	47	"
12 "	30.29	45	47	S.S.E.

Cloudy with moderate winds in a.m. and stronger breeze in P.M.

Monday, Oct. 20<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 am	30.15	47°	48°	S.E.
8 "	30.00	47	47	"
12 m.	29.92	47	47	"
4 P.M.	29.81	48	48	"
8 "	29.90	49	48	S.W.
12 "	30.03	48	48	S.S.W.

Half a gale from S.E. with rain & heavy sea.

Tuesday, Oct. 21<sup>st</sup> 1873.

Time	Bar.	Air	Water	Wind
4 am	30.15	48°	48°	S.S.W.
8 "	30.26	48	48	"
12 m.	30.38	57	47	"
4 P.M.	30.42	52	49	"
8 "	30.52	52	50	"
12 "	30.55	50	50	S.S.E.

Cloudy, wind moderate all day with heavy S.W. swell.

Wednesday, Oct. 22<sup>nd</sup> 1873.

Time	Bar.	Air	Water	Wind
4 am.	30.50	49°	49°	S.E.
8 "	30.49	48	50	"
12 M.	30.44	51	49	"
4 P.M.	30.39	51	50	"
8 "	30.38	52	50	"
12 "	30.33	51	50	S.

Cloudy, with moderate wind all day.

Thursday, Oct. 23<sup>rd</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	30.29	52°	50°	S.
8 "	30.32	51	49	"
12 M.	30.30	52	51	"
4 P.M.	30.32	54	50	"
8 "	30.33	52	50	"
12 "	30.33	52	50	"

Cloudy with fresh winds from S.ward.

Friday, Oct. 24<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 am	30.33	52°	50°	S.
8 "	30.37	52	51	"
12 M	30.37	52	51	"
4 P.M	30.40	53	52	"
8 "	30.45	54	52	"
12 "	30.46	53	51	"

Weather unchanged, with heavy S.W. swell.

Saturday, Oct. 25<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 am.	30.48	54°	51°	S.
8 "	30.53	53	51	"
12 M.	30.58	54	52	"
4 P.M.	30.57	53	53	S.S.E.
8 "	30.60	52	52	S.E.
12 "	30.65	52	52	"

Weather unchanged.

Sunday, Oct. 26<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	30.62	50°	53°	S.
8 "	30.64	50	54	"
12 M.	30.63	51	52	S.S.E.
4 P.M.	30.59	51	52	"
8 "	30.59	51	52	Light air
12 "	30.60	50	54	Calm

Weather much the same, but wind lighter & more variable.

Monday, Oct. 27<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 am.	30.59	51°	53°	Calm
8 "	30.58	50	52	"
12 M.	30.61	64	56	"
4 P.M.	30.56	52	54	N.E.
8 "	30.52	49	55	"
12 "	30.51	51	56	"

Dead calm nearly all day. Late in P.M. a little Northerly air. These light Southerly & Easterly winds are unprecedented at

This time of the year. About noon in Lat.  $49^{\circ} 24' 01''$  N. & Long.  $132^{\circ} 41' 0''$  W. essay a sounding with a line composed of fine hemp twine and a weight of forty pounds. Owing to an imperfection in the line, it parted when 36 fathoms had run out. Replace the heavier weight with a six pound lead & sound as follows:

Run out	Time 50 fms	Time per 100 fms	Rate per 100 fms	Diff.
	h m sec	m sec	m sec	sec.
Let go	10 05 0	05 0	-	
64 fms	05 33	05 33	-	
164	06 58	06 58	01 25	
264	08 45	08 45	01 47	22
364	11 04	11 04	02 19	32
464	13 35	13 35	02 31	12
50	14 55			
564	16 13	16 13	02 38	07
50	17 36			
664	19 0	19 0	02 47	09
50	20 32			
764	22 0	22 0	03 0	13
50	23 30			
864	25 0	25 0	03 0	00
50	26 38			
964	28 17	28 17	03 17	17
50	29 57			
1064	31 38	31 38	03 21	04

Run out	Time per 50 fms	per 100 fms	Rate per 100 fms	Diff.
	h m sec	m sec	m sec	sec.
50	10 33 17			
1164	35 0	35 0	03 22	01
50	36 48			
1264	38 30	38 30	03 30	08
50	40 17			
1364	42 10	42 10	03 40	10
50	44 04			
1464	45 55	45 55	03 45	05
50	47 52			
1564	49 54	49 54	03 54	14
50	52 03			
1664	54 10	54 10	04 16	19

No bottom reached. On hauling in, 330 fathoms being a little larger than the rest came in safely, the rest parted near the end of the fine line.

This line was not originally intended to be hauled in, but it seems evident that the second size would serve in most cases to sound with and probably to recover the lead. It was ordinary twine such as is sold by stationers for tying up parcels.

Tuesday, Oct. 28<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 AM.	30.48	51°	55°	N.E.
8 "	30.44	50	54	"
12 M.	30.42	52	56	"
4 P.M.	30.36	52	56	"
8 "	30.39	52	55	Variable
12 "	30.38	52	56	Calm

Wind light or nearly none. Weather cloudy.

Wednesday, Oct. 29.

4 AM.	30.38	53°	57°	Calm
8 "	30.39	52	57	N.W.
12 M.	30.42	54	57	"
4 P.M.	30.42	55	57	"
8 "	30.45	54	58	"
12 "	30.49	54	58	N.N.W.

Weather cloudy. Wind very light.

Thursday, Oct. 30

4 AM.	30.48	52°	58°	N.N.W.
8 "	30.49	52	58	"
12 M.	30.49	54.	59	"
4 P.M.	30.50	56	59	"
8 "	30.51	54	58	"
12 "	30.56	54	59	N.

Day cloudy; wind light.

Friday, Oct. 31<sup>st</sup> 1873.

Time	Bar.	Air	Water	Wind
4 A.M.	30.57	54	59	N.N.W.
8 "	30.56	53	59	"
12 M.	30.55	54	60	N.N.E.
4 P.M.	30.50	55	60	"
8 "	30.47	54	59	"
12 "	30.42	54	59	"

Cloudy wind fresher in P.M.

Saturday, Nov. 1<sup>st</sup>

4 A.M.	30.37	54°	58°	N.
8 "	30.31	55	57	"
12 M.	30.26	53	53	"
4 P.M.	30.15	53	52	"
8 "	30.19	52	52	"
12 "	30.21	51	52	"

Day partly clear. Wind fresh & strong.

Sunday, Nov. 2<sup>nd</sup>

4 A.M.	30.25	50°	52°	S.S.W.
8 "	30.30	46	49	"
12 M.	30.35	50	52	"
4 P.M.	30.33	49	49	S.S.W.
8 "	30.34	49	50	"
12 "	30.34	48	50	"

Cloudy and calm, or with light head winds.

Monday, Nov<sup>r</sup> 3<sup>rd</sup> 1873.

Time	Bar.	Air	Water	Wind
4 a.m.	30.32	48°	50°	S.W.
8 "	30.30	48	50	S.
12 M.	30.28	51	53	"
4 P.M.	30.21	54	53	"
8 "	30.24	52	55	N.W.
12 "	30.24	52	52	"

Day foggy with a little sunshine and light southerly winds.

Tuesday, Nov<sup>r</sup> 4<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 a.m.	30.21	53°	53°	N.E.
8 "	30.21	53	53	Variable
12 M.	30.19	52	55	"
4 P.M.	30.15	60	54	S.
8 "	30.16	58	54	"
12 "	30.17	54	55	S.S.E.

Some sun, with fog and light winds.

Wednesday, Nov<sup>r</sup> 5<sup>th</sup>

Time	Bar.	Air	Water	Wind
4 a.m.	30.12	55°	55°	S.
8 "	30.14	54	55	"
12 M.	30.14	58	56	"
4 P.M.	30.15	56	54	S.E.
8 "	30.16	55	54	"
12 "	30.16	54	54	S.S.E.

Day foggy and cloudy with some rain and moderate winds.

Thursday, Nov<sup>r</sup> 6<sup>th</sup> 1873.

Time	Bar.	Air	Water	Wind
4 a.m.	30.19	57°	55°	S.
8 "	30.22	56	54	N.E.
12 M.	30.20	58	55	N.W.

Beef into San Francisco Bay and anchor off Mission Rock at 1 P.M. completing our season's field work.

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