

I.—REPORT UPON THE INVESTIGATIONS OF THE U. S. FISH COMMISSION STEAMER ALBATROSS FOR THE YEAR ENDING JUNE 30, 1895. (ABSTRACT.)

BY LIEUT. COMMANDER F. J. DRAKE, U. S. N., *Commanding.*

On July 1, 1894, the *Albatross* was in latitude $57^{\circ} 22' N.$, longitude $167^{\circ} 36' W.$, 86 miles ENE. from St. Paul Island, Bering Sea, in search of sealers and pelagic sealing vessels. A few seals were observed in that locality, playing about the ship, jumping and diving. The weather was cloudy, low overcast, settling into a fog during the evening. The course was laid for Shaw Bay, and the run made in a dense fog with light northerly wind. The coast of Unimak Island was sighted the afternoon of the 2d about 9 miles west of Cape Lapin, after running by soundings to 10 fathoms, as the fog hung low, obscuring the bluffs, and the shore only a few feet above the surf could be distinguished. Feeling our way along the shore to the northward and eastward, Cape Lapin was rounded with the intention of entering Shaw Bay. The fog shutting down thick, prevented search for sealers in Shaw Bay, and the *Albatross* was therefore put offshore in the vicinity of Unimak Pass for the night. The current around Cape Lapin was found to have a velocity of $2\frac{1}{2}$ to 3 knots per hour, setting to the westward.

The next morning, July 3, we stood in for Akutan. The fog lifting gave the outline of the island in relief against a bank to the southward. Approaching that island from the north two currents are encountered, an offshore current 20 miles from the island setting in an opposite direction to the inshore current, east and west. Entering Akutan Bay, on a SSE. (magnetic) course, at a distance of 2 miles from Akun Island, opens out the bay between these islands and discloses the entrance of Akutan Harbor by a bold, black bluff facing the southeast point of the island. When abreast of a prominent pinnacle rock on the Akun shore, 4 miles from the entrance, stand across the bay on a SSW. (magnetic) course. Rounding the bluff, at a distance of half a mile on the starboard hand, opens the bay, disclosing the settlement on the north shore, situated on a projecting spit, which is steep. Steer a midchannel course and anchor close to the shore abreast of the village in 18 fathoms, or proceed to the head of the bay, $1\frac{1}{4}$ miles above the village, and select anchorage in 5 to 7 fathoms.

Owing to the short stay of the *Albatross*, we anchored off the village in 18 fathoms, soft bottom, two ship's lengths from the beach, with the Greek church bearing NW. $\frac{1}{2}$ N. (magnetic). The bay is about 3

miles in length, $\frac{3}{4}$ to $1\frac{1}{4}$ miles in width, and free from outlying rocks except at the bluff, north entrance, which it is well to give a berth of one-fourth mile at least. A Greek frame church and 6 frame houses belonging to the Alaska Commercial Company, and 14 barabaras, constitute the village. The population numbers 66 all told, 33 males and 33 females. Fishing and fox and sea-otter hunting are their only employments. At the time of our visit the men were away on the Sannak Islands engaged in otter-hunting for the company. Fishing is pursued only as a means of subsistence. The seining and fishing parties sent out from the ship were not successful, owing to the limited space over which they were able to work. With sufficient time to make an examination of Akutan Harbor favorable results would probably be obtained relative to its fishery resources. A late spring had somewhat retarded the verdure, yet the snow was fast disappearing from the base of the hills, and wild flowers were budding forth. A prominent landmark, looking up the valley at the head of the bay, is the lofty peak of Akutan Volcano, skirted by an unbroken snow-belt and sending out clouds of smoke and steam. On leaving Akutan Harbor we ran into a dense fog at the entrance, which was carried until our arrival in Dutch Harbor.

The course was laid 4 miles off the north shore of Akutan, SW. $\frac{1}{2}$ S. In a run of 18 miles on this course a set SSE. of 8 miles was experienced, which brought us up in Kalekhta Bay, east of Cape Kalekhta, at 8 p. m. A course was then laid NW. $\frac{1}{2}$ W. 20 miles, then SW. $\frac{1}{2}$ S. 20 miles, then SE. $\frac{1}{2}$ E., picking up Unalaska Island at 9 a. m. July 4, and running in by the lead to $8\frac{1}{2}$ fathoms a good anchorage was found on a little plateau in one of the small bays which indent this coast. A dense fog prevailing, the boats were sent out and made a reconnoissance, which located us 7 miles west of Wislow Bay. The ship was dressed at each masthead and a salute of 21 guns fired at noon in honor of the day. Getting under way at 1 p. m. we picked our way along the coast, rounded Cape Cheerful, and anchored in Dutch Harbor at 4.10 p. m. Found the U. S. S. *Mohican* and *Petrel* in port; also the coal ship *Iroquois*, steam collier *Willamette*, and whaling bark *C. H. Bailey*.

Orders were received from the commander in chief "to proceed to the Pribilofs for the purpose of landing Messrs. Townsend and Miller, to communicate with the senior naval officer, then to further proceed to the southern entrance of Isanotski Strait, and there report to the commanding officer of the *Petrel* for such instructions as he might give in regard to the examination to be made of the anchorages to which small vessels resort in and around the Sannak Islands. When the duty is completed return to the Isanotski Pass, anchor in it where sealing vessels that may attempt to pass through can be intercepted, then proceed with the repairs upon the boilers and engines that were interrupted. Complete them within six days, and then return to Unalaska."

Accordingly, the *Albatross* was coaled on the 7th and sailed at 6 a. m. the 8th. Mr. J. Stanley-Brown, the agent of the North American Commercial Company, desiring passage to the Pribilofs, came on board as

my guest. The evening of the 8th closed with every indication of approaching bad weather. On the 9th, 10th, and 11th it blew a stiff gale from the SW., was overcast and rainy, moderating by noon of the 12th. St. George was made, running in by soundings, on the morning of the 9th. A good anchorage was found off the village, north side, in $9\frac{1}{2}$ fathoms, where the *Albatross* rode out the gale in company with the U. S. S. *Alert* until the 12th. A heavy surf prevented any communication with the shore. The appearance of the weather not indicating a settled condition, with the barometer fluctuating between 30.26 and 29.70, and a heavy fog hanging over the island, and no immediate prospect of landing Messrs. Townsend and Miller with their outfit in order to photograph the rookeries on St. George, it was therefore decided to try St. Paul, and to return to St. George at a later date.

Accordingly, the *Albatross* got under way at 11 a. m. on the 12th and anchored at 8.30 p. m. on the north side of St. Paul, where the U. S. S. *Ranger* was still at anchor riding out the gale. Messrs. Brown, Townsend, and Miller were safely landed with their outfit, when the *Albatross* left at 11 p. m. for Isanotski Strait.

The next day we were obliged to stop the engines for several hours in order to replace two dowel pins which had suddenly broken off, but were under way again at 4.40 p. m. In latitude $56^{\circ} 35' N.$, longitude $168^{\circ} 18' W.$, St. George bearing WSW. $\frac{1}{4}$ W. (magnetic), distant 44 miles, we sounded in 59 fathoms, green mud and sand. During our wait a fishing trial of thirty minutes with an average of 13 lines revealed a fair fishing station, Hyd. No. 3502. The catch consisted of 76 cod; average weight, $10\frac{3}{8}$ pounds; average length, 30 inches.

Off Unimak Pass, in Bering Sea, we overhauled and boarded the *Uranus*, fisherman, ninety-three days out from San Francisco. She is a three-masted schooner owned by C. G. Jorgensen, carries a crew of 14 men, and is equipped with 9 dories and 1 ordinary boat. She had been fishing along the south shore and islands of the Alaska Peninsula, but with small success, and was on the way to Baird Bank, cod fishing.

Sunday, July 15, we arrived at the mouth of Isanotski Strait, Ikatan Bay, and anchored, having run a line of soundings from Cape Lazareff, 18 miles west of Cape Pankof, to Ikatan Bay, at an average distance of 1 mile from shore. The shelf appears to slope gradually from 25 fathoms off Cape Pankof to 60 fathoms off Cape Lazareff, the bottom being composed of dark and gray sand and gravel.

A short reconnoissance was made of Ikatan Bay on the 16th, to locate headlands. In the afternoon we entered the pass at high water and steamed up to Morzhovoi village, a distance of 8 miles. Found an anchorage in the middle of the cove off the village, in $4\frac{1}{2}$ fathoms, with the Greek church bearing S. $\frac{1}{4}$ E. (magnetic), muddy bottom, and good holding-ground. A high bluff on the north side forms a good protection from northerly winds, which, however, are drawn through the cove with much force at times from the eastward. The harbor is landlocked and is a safe anchorage in all winds except from the southwest.

Fishing, hunting, and seining parties were sent out. Flounders, sculpins, small cod, salmon, salmon trout, sea trout, and clams were found here. On certain week days during the salmon season the seine is hauled by the native women, who wade into the water up to their shoulders while the men stand on the shore and direct their movements.

The settlement of Morzhovoi village consists of 34 males and 40 females, of native blood, and 6 whites. Several low frame houses, the property of the Alaska Commercial Company, a Greek frame church, and a number of barabaras constitute the dwellings. The village is situated on a low sloping bluff, terminating in a rocky and gravelly spit on the south shore of the cove. Bear, fox, and otter hunting are the principal occupations.

Our stay of three days at this port gave us the first opportunity in the cruise to overhaul the engines and make some repairs which were absolutely necessary. In the meantime the officers of the ship made a reconnoissance of the harbor (Traders Cove), and Isanotski Strait, or False Pass, as it is commonly known, running lines of soundings and correcting the shore line, which was much out, thereby doing some valuable work in developing this locality for future navigation.

From careful inquiry and statements made by the traders and natives at this port, I found that during a brief period of about twelve days in the first part of June, fur-seals are observed to pass into Bering Sea by this route. Then all traces of them disappear as suddenly as they came. The tides in Traders Cove are much influenced by the prevailing winds. A backset, however, is observed in the ebb tide, making a long and short tidal interval of 15^h 30^m flood and 8^h 30^m ebb.

Leaving Morzhovoi on the morning of July 20, the *Albatross* passed out of Isanotski Strait with a strong ebb tide and dense fog, making about 16 knots over the ground. At 10.20 a. m. anchored in Ikutan Bay near the U. S. S. *Petrel*, which was waiting our arrival in order to proceed to the Sannak Islands. In Ikutan Bay good holding-ground is found in a small cove immediately west of Ikatok Point, on the south side of the bay, which offers good protection from southeasterly, southerly, and southwesterly winds and sea. For northeasterly, northerly, and northwesterly weather, a safe anchorage is found on the north side of the bay west of Sankin Island, close to and under the bluff east of the entrance to the strait. Both anchorages are free from the rush of tide, which has a velocity of 7 to 9 knots in the pass.

In this bay were found young salmon, salmon trout, tomcod, sand lance, flounders, and sea trout. Cod and halibut were caught in large numbers with hand lines.

On July 22 got under way in company with the U. S. S. *Petrel*, and stood over for the Sannaks. Commenced a line of soundings abreast of Cape Pankof, bearing SW. $\frac{1}{4}$ S., distant 1 mile, and continued same with 3-mile intervals to Acherk Harbor, Sannak Island. The deepest water between Cape Pankof and Acherk Harbor was found 1 $\frac{1}{2}$ miles ESE. from Cape Pankof, where it reaches 50 fathoms. It shoals gradually

to 14 fathoms at the entrance to Acherk Harbor, one-fourth mile from the shore. A thick fog shutting down prevented a continuation of the line of soundings along the north shore of the Sannaks. We therefore anchored in the entrance to Acherk Harbor in 11 fathoms, soft bottom. The steam cutter was lowered and equipped for a two-days' run, in order to make an examination of the harbors and shore line of the north and east sides of these islands. Taking the whaleboat of the *Petrel* in tow, the cutter left the ship, in charge of Ensign W. R. Shoemaker, U. S. Navy, assisted by Ensign M. L. Bristol, U. S. Navy, from the *Petrel*. The cruise of the cutter was successful as far as searching the coast line and harbors for the presence of seals and sealers is concerned. They covered a distance of 40 miles, and returned without accident, having run the greater portion of the distance in a dense fog, working in and out among the reefs, which are numerous around the harbors of these islands.

The following day, July 23, it blew fresh from the SW., with thick fog, and heavy sea breaking on the reefs half a mile to the westward of our anchorage. These reefs form a good breakwater to vessels lying at anchor in the entrance to Acherk Harbor in 10 or 12 fathoms of water. As the weather did not improve, it therefore became impossible to make an examination of the bottom on the north side of the islands within the limited space of time allowed. Hence the *Albatross* left Acherk Harbor in the forenoon of July 24 to return to Dutch Harbor, Unalaska. A dense fog was carried to Unimak Pass, when it lifted sufficiently to lay a course through the pass. The next morning fell in with the American bark *J. D. Peters*, of San Francisco, returning from Port Clarence. Sent officer on board to warn him. Came to anchor at 11 a. m. Found the U. S. S. *Mohican* and *Alert* in port. The *Petrel* arrived the same evening, and the *Concord* on the 29th.

Coaled on the 27th and 28th, and sailed on the 30th to cruise to the westward and northwestward of the Pribilof Islands, outside of the 60-mile zone. A detour was made to the westward of Dutch Harbor for a distance of 164 miles, which placed us in the SW. quadrant, 100 miles from St. George, at noon of the 31st of July. Having sighted none of the sealers which had cleared for Bering Sea on the 28th, the course was then laid for St. George in order to pick up the naturalists, who had been left at the Pribilofs on our previous visit.

We arrived off St. George and anchored off the village on the morning of August 1; found the U. S. S. *Adams* there. Left mail for St. George, and got under way for St. Paul Island, where we arrived at 6 p. m., and found Messrs. Townsend and Miller, who came on board. We sailed that evening for a cruise to the northwest of the Pribilofs. On August 3 and 4 a line of soundings was run in order to develop the platform in this region. The line terminated in latitude $60^{\circ} 25' N.$, longitude $178^{\circ} 49' W.$, 125 miles from Cape Nazarin, eastern Siberia, bearing N. $29^{\circ} W.$ true. The appearance of bad weather approaching, together with a limited coal supply, prevented further continuation of the line

of soundings to the 100-fathom curve, which was probably within a distance of 45 miles north of our position. A summer gale, common to this section, set in and blew for 36 hours from the southward and eastward, compelling us to lay a course to the northward and eastward. Accordingly, we worked over to the vicinity of St. Matthew Island, and then shaped a course to the southward and westward in order to ascertain presence of seals and sealers in this region.

August 7 and 8 were days of fair sealing weather, with comparatively smooth sea and light airs from the southward. Passing to the southwest through this quadrant, at an average distance of 75 to 90 miles from St. Paul, many seals were observed. Outside of 200 miles from St. Paul, northwest, no seals were visible. By stopping the engines and allowing the ship to lie passive in the water, as many as 20 seals were counted alongside within a few feet of the ship, some playing and jumping, apparently young seals, from their smaller size, while the larger size were principally sleeping. By sending out a boat with Mr. Townsend and a camera several photographs were obtained of seals, both asleep and playing. Over 30 were counted by the boat's crew within the space of one hour at a distance of less than half a mile from the ship. A fishing trial was made at this place, latitude $58^{\circ} 2' N.$, longitude $172^{\circ} 57' W.$, in 61 fathoms, which resulted in a catch of 37 cod; average weight 15 pounds, average length 28 inches; 19 males, 18 females. An analysis of the contents of the stomachs showed this to be a rich feeding-ground. Cruising on the 9th in the southwest sealing belt, numerous seals were seen going to and coming from the islands at a distance of 20 miles outside of the 60-mile limit.

The 10th of August was a perfect sealing day, smooth sea, with long swell from the SW. and light airs from east. At 5.20 a. m., latitude $55^{\circ} 55' N.$, longitude $171^{\circ} 45' W.$, St. George Island bearing NE. $\frac{1}{4}$ N. (magnetic), distant 91 miles, we encountered large schools of seals of different sizes, some playing and jumping, others sleeping. The beating of the propellers would awake the sleeping seals at a distance of 150 to 200 yards, when they would dive and disappear. Surface and intermediate tow-nets were put over twice, the latter at a depth of 50 fathoms. The surface net showed numerous larval crabs, small crustaceans, and fish eggs. The intermediate net contained numerous small crustaceans and sagitta. The surface temperature was 44° ; at 5 fathoms 43.5° ; 10 fathoms 43° F. Large schools of seals have been observed within a radius of 75 miles of the Pribilofs in an arc extending from NW. to SW. and S. By stopping the ship, and thereby the noise of the propellers in the water, seals soon appear upon the surface and approach within a few feet of the vessel. In this way numerous schools have been counted, whereas with the ship under way only an occasional seal would be seen at a distance.

Falling in with the British sealer *Mascot*, of Victoria, I placed on board a tank of alcohol, in which stomach specimens of seals were to be placed, to be forwarded to Mare Island, thus obtaining additional data

of interest in determining the nature of pelagic species upon which seals feed, and the locality of the same.

Running short of coal, a return was made to Dutch Harbor, where we arrived on the 11th instant, having steamed 2,032.8 miles since our departure. After coaling, the *Albatross* proceeded on the 17th to continue the cruise among the sealers in the northwest, west, and southwest quadrants outside the prohibited zone. On August 19 called at St. George and left orders for vessels at the islands; then continued our cruise to NW. The evening of the 19th, 20th, and 21st we were hove to in a strong gale, which proved to be a circular storm commencing in the SE., hauling to the southward and then to NW., from which point it blew itself out on the third day. The 22d and 23d were hardly days for sealing, as the sea was still rough and irregular, with fresh breezes from the northward.

We stood across the sealing belt 150 miles to the westward of St. Paul and back to the 60-mile limit, zigzagging our course as circumstances dictated, in order to intercept sealers in this locality. Only two, however, were encountered, the *Mary Ellen* and the *Rosie Olsen*, both of Victoria. They had both returned from the Japan coast, and had taken to date in Bering Sea 67 and 42 fur seals, respectively. During the 24th we encountered another strong gale and heavy sea from the southward and eastward, which compelled us to lie to until the 25th. We then stood away to the southward and eastward for purpose of intercepting any sealers in this portion of the sealing belt which had been blown off their ground during the late gales. Only one vessel was boarded, the *Walter A. Earle*, of Victoria, 95 miles SW. $\frac{1}{2}$ S. (magnetic) from St. Paul Island. His catch at this time was 238 seals. A traverse course was then made, crossing and recrossing the sealing belt in the southern region, in which several seals were seen, but no sealers. During the gales a great many seals were seen making their way, as a rule, toward the islands.

During the ten days passed in cruising in the NW. and SW. quadrants, only one day was found in which sealers would lower boats. The captains of sealers were of the opinion that favorable sealing weather for the season had ended, and conditions pointed to an early close of the sealing season by the middle of September, as the few remaining days in which seals could be taken would not cover the expense of delay in the sea. The sealers all reported that five days out of seven were not sealing days on account of the numerous gales and strong winds which had occurred during the season. Hence, they looked for worse conditions in September. Moreover, the Indian hunters were becoming restless, and would not do good work except there was a prospect of an early return for the home port in September. From interviews with sealers, I found that the great majority had planned to leave the sea about the 10th of September; a few vessels which had white hunters might remain until later in the season. We continued cruising in the same quadrants of the sealing belt on the 26th, and at 3 p. m. of the 27th August were again at anchor in Dutch Harbor.

Referring to the use in this paper of the terms "sealing belt," and certain "quadrants" of the same, I quote here an extract from a letter addressed by me to the Commissioner, under date of August 27, 1894, which will explain the subject:

From a careful examination of the ground passed over by the *Albatross* during this summer's work in Bering Sea, in connection with the reports thus far obtained from sealers boarded and the locality in which seals have been taken in the sealing belt surrounding the prohibited zone, it appears that the sealing-ground for this year has been confined to the western, southern, and southeastern portions of the belt circumscribing the prohibited zone, and which is defined by two radii from St. Paul Island: one N. 51° W. true, the other S. 81° E., covering an arc of 210°. The southeastern and southern belts average 50 miles in width. The western belt varies from 50 to 75 miles, owing to the nature of the plateau in this locality as outlined by the 100-fathom curve. It is to be observed that a strong northerly set occurs in this locality which is not materially affected by northerly winds, but more properly by the topographical features of the bed of this portion of Bering Sea, connecting with the Aleutian chain of islands to the southward, which undoubtedly control the surface, subsurface, and warmer currents of the Japan stream passing into the sea. There is a possibility that this could bring with it certain pelagic species which would be sustained at or near the surface by the warmer subsurface currents rising as they approach the plateau, thereby making this a favorite feeding ground, for in this locality some of the largest catches have already occurred, reaching as high as 250 per diem per sealer.

The area of the western belt is 10,938 square miles. On the north western plateau of this belt 2,536 square miles are inside of the 100-fathom curve, in which its north-eastern border commences in 65 fathoms; it then slopes gradually to the 100-fathom curve. The remaining portion of this belt, 8,402 square miles (77 per cent of the western belt), occupies the slope of the southwestern face of this plateau, varying in depth from the 100-fathom curve to 1,800 fathoms at its western limit.

The area of the southern belt is 6,700 square miles. Its eastern border commences at the 100-fathom curve on the southeastern plateau and slopes gradually to 1,700 fathoms at its western border connecting with the western belt.

The area of the southeastern belt is 4,950 square miles. Its northeastern border commences in 54 fathoms; it then slopes gradually to the 100-fathom curve, connecting with the southern belt.

	Square miles.
Total area of sealing belt.....	22, 588
Area of sealing belt on plateau.....	7, 486

Sixty-seven per cent of the sealing belt is therefore in deep water, outside of the 100-fathom curve.

We remained in Dutch Harbor, undergoing minor repairs and taking coal, until the morning of September 4, when we went to sea under orders from the commander in chief. Off the entrance to Unalaska Bay we fell in with and spoke the British schooner *Kilmenny*, of Victoria, with 600 seal skins, and the American schooner *Deeahks*, of Port Townsend, with 850 skins. They were both bound for Unalaska for water and provisions, and expected to leave the sea between the 10th and 15th of September. The same afternoon, off Akun Island, we boarded the American schooner *Jane Grey*, of San Francisco, with 138 seal skins. She had entered the sea from the Japan coast by way of Attu and was now bound home. The 5th and 6th were occupied in cruising to the southward of the 60-mile zone, and at noon of the latter date we fell in with and boarded the British schooner *Walter L. Rich*, of Victoria, with a catch in Bering Sea of 1,738 seals. This vessel was

bound home also. Leaving her off the entrance to Unimak Pass, the course was set for Dutch Harbor, where we arrived at 8.30 p. m.

The *Albatross* was coaled, and again went to sea at noon of the 8th, for a cruise around the Pribilofs. In order to expedite matters and avoid possible delays, I transferred Messrs. Townsend and Miller to the revenue cutter *Corwin* before leaving port, arrangements having been made for that vessel to convey them to the islands. On the evening of the 8th we fell in with and boarded the American schooner *Allie I. Alger*, of Seattle, bound to Unalaska for water and provisions, and thence home. She had been in the sea thirty-four days, and had taken 327 seals. The following morning spoke the British schooner *Triumph*, of Victoria. This sealer was to leave the sea for home in two days; had been in the sea forty days, and had taken 3,014 seals.

A traverse was run inside the 60-mile circle, touching a 40-mile circle around the Pribilofs, between the 9th and 11th of September, in which only a moderate blow was encountered on the night of the 10th. On the morning of the 11th it was decided to make a lee of St. George, then 40 miles distant, and verify our position. The island was picked up in a dense fog, and the course then shaped for St. Paul, making a run for Otter Island in a moderate cross sea. The latter island was not seen, owing to the dense fog, but was located by the heavy surf pounding on the beach. Then the course was changed for Village Cove anchorage, where we came to off Rocky Point reef in 17 fathoms, after making three attempts to find our way inside in the dense fog prevailing. The fog lifting the next morning revealed our position to be inside of the reef, bearing east (magnetic), and 3 miles from the anchorage in the cove. We got under way at 6 a. m., steamed in, and anchored near the revenue cutter *Corwin*. Messrs. Townsend and Miller came on board and reported their work finished on both St. George and St. Paul islands in counting the dead pups on the rookeries.

We left St. Paul at early daylight on September 13, with weather moderately clear. Passed St. George at 11 a. m., on the starboard beam 3 miles distant, and shaped course to finish traverse where it was suspended on the 11th. Running this out, with moderate weather prevailing, we returned to Dutch Harbor, coaled, and sailed again on the 17th for a short cruise between Unimak Pass and the Pribilofs in search of sealers. Found a rough cross sea running from the northward and westward during the two days we were out, the result of one of the numerous gales passing along the chain of islands at this season of the year. It was evident that most of the sealers had left the sea within a short time, owing to the steadily unfavorable weather prevailing.

We returned to Dutch Harbor again on the evening of the 18th, coaled, and received final orders to return to Mare Island via Sitka and Port Townsend. We left Dutch Harbor on the 20th at 11 a. m., with threatening weather, and passed out of Bering Sea through Unimak Pass that evening. A westerly wind kept the fog banked in Bering Sea, which enabled us to lay a course for Cape Pankof, passing to the northward of the Sannak Islands and reefs. The night being clear, we

were treated to an exceptionally fine view of Shishaldine Volcano in active operation, sending forth a constant flame, with occasional belching, which presented a fine panoramic view of the heavily snow-capped peaks and intervening ranges. In fact, bearings were frequently taken of the volcano, which served in a measure as a light-house, although only approximately located.

The morning of the 21st found us entering the inside passage of the chain of islands between the Sannaks and the Shumagin group. At 7 p. m. we passed out of Gorman Strait and laid course for Sitka. On the 23d we were compelled to lay to for an easterly gale. The remainder of the passage to Sitka was made against a head wind and sea. Mount Edgecomb was sighted at noon of the 26th, distant 60 miles; at 7.40 p. m. we came to an anchor under Mount Edgecomb in 18½ fathoms, soft bottom, with St. Lazaria Island bearing SSW. (magnetic), distant three-fourths of a mile. This anchorage was found to be apparently unaffected by the change of tide, as we lay all night heading on the beach, north (magnetic). The morning of the 27th we steamed into Sitka Harbor, going alongside the dock to coal. A photograph was taken of the Government storehouse and coal pile, which was forwarded to the Bureau of Equipment at their request. A southerly gale set in on the 28th, with a slowly falling barometer, giving indications of a spell of bad weather off the coast. It was therefore decided to take the inland passage from Sitka to Port Townsend, where we arrived on the morning of October 7. After receiving our mail, we steamed to New Whatcom for coal, finding the U. S. S. *Monterey* there. We coaled and sailed for San Francisco on the 10th, stopping en route at Victoria, to land Messrs. Townsend and Alexander, in order that they might continue their investigation of the seal catch for the season.

A fair run was made to San Francisco, without unusual events. A heavy fog set in off Point Reyes, compelling us to proceed with caution. The whistling buoy in the fairway off the bar was picked up at 1.25 a. m., and course laid inside with a strong ebb running. At 3.12 a. m., October 14, came to anchor in Sausalito Bay, having steamed, since April 11, 17,206.3 miles. October 17 the *Albatross* steamed to Mare Island for repairs and general overhauling. On the 20th the Navy Department telegraphed "The services of the *Albatross* are no longer required by the Navy Department." The *Albatross* accordingly returned to duty under the Fish Commission, and was so reported to the Commissioner.

Extensive repairs and changes in the hull of the vessel and her equipment were at once begun, and occupied something over four months, the Commissioner being telegraphed on May 11 that the *Albatross* would be ready to sail by May 20. We left Mare Island at 7.20 a. m., May 18, for Sausalito anchorage preparatory to going to sea. On the way down the bay adjusted new standard and steering compasses, besides visiting several establishments located on the north shore of San Pablo Bay (near Brothers Islands), which are engaged in catching and drying large quantities of fish for the market and exportation.

This industry is apparently fast depleting the waters of this bay, owing to the small size of the smelt, whitefish, and herring which are caught and dried.

The *Albatross* anchored in Sausalito at 1.20 p. m. In addition to the complement allowed by the Navy Department, the authorization of the Commissioner for the enlistment of ten men (five seamen and five ordinary seamen) and one machinist for the cruise, in order to bring the force up to the required cruising complement, was complied with.

General instructions outlining the summer's work in Bering Sea were received on the 2d of May, being classed under the four heads: "Sealing investigations at sea," "Observations on the Pribilof Islands," "Fishery investigations," and "Hydrographic inquiries." The *Albatross* sailed from Sausalito, passing out of the Golden Gate on the afternoon of the 21st of May, taking the Bonito Channel in order to avoid the heavy sea on the bar, which prevented sailing on the 20th instant. Point Reyes was rounded at 11 p. m., when we encountered a heavy head sea and wind. This was carried until the 23d, when it moderated. The 24th set in with a SE. gale, which we carried to anchorage in Neah Bay on the evening of May 25. Observations with regard to pelagic sealing and sealers were commenced here, as set forth in instructions.

On May 26, 6 a. m., we got under way, stood up the Strait of Juan de Fuca, and at 2.03 p. m. anchored off Victoria, where additional information was obtained relative to the number and class of sealers which will enter Bering Sea this summer. On May 28 the *Albatross* proceeded to Port Townsend, where a list of the Puget Sound fleet of Bering Sea sealers was obtained. Additional instructions were received here by which the *Albatross* was enabled to pursue sealing investigations at sea, among them being an executive order giving the commanding officer of the steamer *Albatross* authority to board sealing vessels, and defining the status of this ship with regard to the patrol fleet under the management of the Treasury Department.

Mr. Frederick W. True, curator of mammals in the United States National Museum, and Mr. D. W. Prentiss, jr., also from the National Museum staff, reported on board for passage to the Pribilof Islands for the purpose of making a study of the fur-seals on those islands. Mr. A. B. Alexander also joined the ship here.

On May 31, at 9.30 a. m., we left Port Townsend, passed through Haro Strait to Pender Island, where we anchored for the night in Otter Bay. An early departure was made the next morning, standing on through Active Pass and up the Strait of Georgia for Comox, Union Bay, where we coaled ship on June 3. At 7 a. m. of the 4th we took our departure from Comox and stood out of Baynes Sound, through Lambert Channel, and up Georgia Strait, and entered Discovery Passage, steaming through Seymour Narrows at high water. A heavy SW. gale blowing off the coast, with low overcast, producing strong winds in Johnstone Strait, made it advisable to anchor in Blinkinsop Bay for the night, where we rounded to under the North Bluff, after entering the bay, letting go the anchor at 7.12 p. m. in 6½ fathoms. A

table flat of sand and clay covers one-half the area of this bay. It is dry at low water and is to be avoided in choosing an anchorage, as the shoal is abrupt, going from 6 fathoms to 6 feet. It extends along the north shore of the bay within 200 yards of a white bluff, then curves to the SE., with a short projecting spit in the middle of the bay, to a small island on the south shore. A good landing on the north shore will be found at high water. The holding-ground is good, with smooth water and good protection from heavy SW. winds.

Although the SW. blow had not decreased during the night, we got under way the next morning and stood on through Johnstone Strait to Alert Bay, Cormorant Island. Seining and fishing parties were sent out here, but nothing new was developed. Mr. Spencer, the owner of the cannery at this port, informed me that the canning industry in these waters is rapidly increasing. Leaving Alert Bay on the morning of June 6, we passed out to sea through Goletas Channel, clearing the latter at noon, and shaped a course for the Shumagin Islands.

June 7 was ushered in with heavy swell and seas from the southward and westward, the weather becoming boisterous, ending up with a SW. gale, which shifted around to a southeaster, with much rain and mist, making it impossible to distinguish objects at a distance of half a mile. Under these conditions, however, the Shumagins were sighted on the 13th, and, passing through Gorman Strait, we anchored at Sand Point that evening in order to intercept the mail steamer from Unalaska, which was scheduled to leave on this date. This port has practically been deserted by sealers, only one having put in here this season, the *Mary Taylor*, of Victoria.

Leaving Sand Point on the morning of June 15, the run was made to Unalaska, taking the inside passage north of the Shumagin and Sannak islands, a gale still blowing outside, with fog and rain. We arrived at Unalaska at 11.30 a. m. on the 16th and found the following vessels of the patrol fleet in port, viz: *Rush*, *Bear*, *Corwin*, and *Grant*. The *Perry* was at the Pribilofs.

Dr. Leouhard Stejneger, curator in the United States National Museum, arrived in the Alaska Commercial Company's steamer *Bertha* on the 17th and reported on board for passage to the Commander Islands. We steamed out of Dutch Harbor on the morning of the 23d of June, Mr. J. Stanley-Brown, manager and representative of the North American Commercial Company, taking passage with us to St. Paul. We arrived at Village Cove anchorage at 5 p. m. on the 24th, picking up the islands in a dense fog which prevailed throughout the day. Messrs. True, Prentiss, and Miller were landed on the 25th to pursue their work upon the islands. I called upon the chief Treasury agent, Mr. J. B. Crowley, and made satisfactory arrangements with regard to seal investigations upon the Pribilof Islands. I am pleased to say that Mr. Crowley fully entered into the spirit of the work, and facilitated its execution, all of which was materially aided by the cooperation of Mr. J. Stanley-Brown, of the North American Commercial Company.

A drive from Polovina rookery to Stony Point, a distance of 3 miles, was made on the morning of the 26th for the benefit of Dr. Stejneger's investigations. The abnormal ice limit around the islands this year has retarded the arrival of the seals upon the rookeries at least two weeks. Large quantities of floating ice were drifting about the islands on the 15th day of June. Innumerable snow patches extend to the water line throughout the Aleutian chain and the Pribilofs, and are remarked by all the natives as exceeding any previous record within the last fifteen years.

Dr. Stejneger returned on board on the morning of June 26, and we steamed out of Village Cove at 1.30 p. m., shaping our course to the nearest point on the fifty-sixth parallel, in order to connect with original soundings made by this vessel in 1893. Accordingly we took up the line of soundings in latitude 56° N., longitude $177^{\circ} 30'$ W., at 9.02 p. m. June 27. No bottom specimen was brought up, as the cup failed to work, owing to a defect in the spiral valve spring which did not show itself upon previous examination. The interval was set at 40 miles for this portion of Bering Sea. On the 28th we were compelled to lay to for fourteen hours under fore and aft sail, with banked fires, owing to a strong gale blowing from the SW., which was accompanied with rain, mist, and sleet, and against which we could not make suitable headway that would in any way have compensated for the amount of coal it would have been necessary to burn or the extra wear and strain it would have placed upon the engines. At 2.20 a. m. on the 29th we went ahead on our course, taking up the line of soundings on the original parallel of 56° N. A comparatively uniform depth was found, ranging between 2,056 and 2,105 fathoms. Brown mud and ooze defined this portion of the Bering Sea basin.

A constant and vigilant outlook was kept both day and night for seals from the time the *Albatross* passed to the northward of Cape Mendocino. One seal was seen while at anchor off Port Townsend, which afforded considerable amusement to all hands. The dingey was laying at the port lower boom, secured for the night. About 9 p. m. the barking of a seal was heard around the ship. It proved to be a male fur-seal between 3 and 4 years old. After swimming several times around the ship it approached the dingey on the outboard side, away from the ship, and having satisfied itself that the dingey was not occupied, proceeded to get in, and, locating itself in the stern, remained for the night. Several attempts were made to capture this seal, but without avail. A few seals were observed approaching the passes east of Unalaska. None were seen on the passage to the Pribilofs until within 1 or 2 miles of the islands, and these were yearlings and bachelors, which were few in numbers. Leaving the islands, one or two seals were seen at a distance of 5 miles.

On the morning of the 29th the *Albatross* crossed the 180th meridian at 7 o'clock, changing the date to June 30; hence the end of the fiscal year finds us engaged in running a line of soundings from St. Paul Island to Bering Island.

There have been a great many changes in the officers attached to the *Albatross* during the past year, as follows:

- August 17, 1894, Ensign C. M. Fabs, U. S. Navy, detached; Ensign N. C. Twining, U. S. Navy, reported.
- October 22, 1894, Lieut. A. F. Fechteler, U. S. Navy, executive and navigating officer, detached.
- November 1, 1894, Ensign N. C. Twining, U. S. Navy, detached; Ensign Phillip Williams, U. S. Navy, detached.
- November 13, 1894, Lieut. P. S. Carter, U. S. Navy, reported as executive officer.
- November 19, 1894, Ensign W. R. Shoemaker, U. S. Navy, detached.
- November 21, 1894, Ensign Edward Moale, jr., reported.
- January 23, 1895, P. A. Engineer Howard Gage, U. S. Navy, detached; P. A. Engineer J. M. Pickrell, U. S. Navy, reported.
- March 1, 1895, Lieut. Houston Eldredge, U. S. Navy, detached; Ensign Harry George, U. S. Navy, reported; Ensign W. G. Miller, U. S. Navy, reported.
- March 27, 1895, P. A. Engineer J. M. Pickrell, U. S. Navy, detached.
- March 28, 1895, Ensign Harry George, U. S. Navy, detached.
- April 2, 1895, Ensign Benjamin Wright, U. S. Navy, reported.
- April 29, 1895, Ensign Edward Moale, U. S. Navy, detached.
- May 13, 1895, P. A. Engineer Emil Theiss, U. S. Navy, reported.
- May 17, 1895, Lieut. F. S. Carter, executive officer, detached; Lieut. B. O. Scott, U. S. Navy, reported as executive officer; Ensign R. H. Leigh, U. S. Navy, reported.
- May 28, 1895, Ensign C. F. Hughes, U. S. Navy, reported.

List of officers, June 30, 1895.—Lieut. Commander F. J. Drake, U. S. Navy, commanding; Lieut. Bernard O. Scott, U. S. Navy, executive officer; Ensign W. G. Miller, U. S. Navy; Ensign Benjamin Wright, U. S. Navy; Ensign C. F. Hughes, U. S. Navy; Ensign R. H. Leigh, U. S. Navy; P. A. Surg. E. S. Bogert, jr., U. S. Navy; P. A. Paymaster Eugene D. Ryan, U. S. Navy; P. A. Engineer Emil Theiss, U. S. Navy; captain's clerk, Harry Clifford Fassett, U. S. Fish Commission.

Scientific staff.—C. H. Townsend, resident naturalist; A. B. Alexander, fishery expert; N. B. Miller, general assistant.

The Commission is indebted to Capt. H. L. Howison, U. S. Navy, commandant of the Mare Island navy-yard, and the officers under his command for the uniform courtesy to the officers of this vessel and the facilities of the yard which were given us during the period of repairs and refitting. For taking care of and forwarding our mails we are indebted to the Navy pay-office at San Francisco, which we fully appreciate, under the conditions of a cruise in Bering Sea. We are also indebted to the Alaska Commercial Company for material aid and forwarding mail. To Mr. J. Stanley-Brown, manager of the North American Commercial Company, we are under obligations for subsisting Messrs. True, Prentiss, Townsend, and Miller, who were landed from this vessel in the interest of the Commission; also for subsistence, quarters, and medical attention for two of our sick whom we were compelled to leave upon the island of St. Paul while making the trip to Bering Island and return.

To Mr. J. B. Crowley, chief Treasury agent, the Commission is also indebted for his unvarying courtesy, both in granting permission for the landing of our patients and in the spirit shown in placing all cou-

veniences and much valuable information at our disposal while engaged in making a survey of the rookeries on St. Paul and St. George.

During the year just ended the cruising-ground of the *Albatross* has been between the 38th and 60th parallels of north latitude and the 122d and 180th meridians of west longitude. She has been under way and steaming 112 days and has made 13,181.3 nautical miles.

NOTES ON FISHERY INVESTIGATIONS FROM JULY 1 TO 26, 1894.

BY A. B. ALEXANDER, *Fishery Expert.*

As the *Albatross* was engaged on sealing patrol duty during the summer of 1894, comparatively little time was available for fishing trials. The data herein set forth were gathered while the writer was attached to the ship before his transfer to the sealing schooner *Louis Olsen*.

On July 1 a trial was made with hand lines for bottom fish in 37 fathoms at station 3497, latitude $56^{\circ} 59' N.$, longitude $163^{\circ} 48' W.$ Nothing was caught here, although thirty minutes were given to the trial, long enough, under ordinary circumstances, to test the bottom as to the abundance of food-fishes.

The following day, two hours were devoted to hauling the seine in Akutan Harbor. The beaches where seining was carried on were quite steep and rough, there being many sharp rugged bowlders lying from 50 to 150 feet from the shore. The character of these beaches did not indicate an abundance of fish. Several hauls were made on both sides of the harbor. The result, however, was far from satisfactory; two small flounders, several sand-lance, and a red-spotted trout were the catch. About 2 miles from where the *Albatross* was anchored, toward the head of the bay or harbor, there is a smooth beach; the water is much shallower than where we hauled the seine, and there are also fewer rocks—a much better place for collecting than where our investigations were made. There are likewise several small streams which flow down the mountain side into the head of the bay, at the mouths of which salmon are said to be plentiful. Our time being limited, it was not deemed advisable to go so far away from the ship, and in consequence our search was confined more diligently to the barren places than it otherwise would have been.

The inhabitants of Akutan village, like all other tribes in Alaska, consume large quantities of fish. Cod can be had at all seasons, and the above-mentioned streams afford a sufficient supply of salmon for all purposes; if not, there are other small bays close by where salmon are numerous enough to meet the requirements of a village of this size. The settlement, however, is not large, being composed of seven frame houses and about a dozen barabaras. The catching of fish is mostly done by the women, assisted by the children of both sexes. The able-bodied male portion of the village spend a greater part of their time

in hunting the sea-otter. This was formerly a very lucrative employment, but the indications are that in future the hunters will have to resort to fishing, and depend more on the necessities of life and less on the luxuries which they have been accustomed to for so many years. Sea-otter are becoming very scarce, and before long some other employment will have to be found. These people are in no danger of starving, even should the sea-otter become exterminated, for fish of various kinds are plentiful and can be caught almost at their doors.

The next forenoon, July 4, being caught in a dense fog, the ship came to anchor in 7 fathoms of water 4 miles to the westward of Wislow Island, on the north shore of Unalaska Island. A hand line was dropped over the side, and in a few minutes several cod were caught. Soon after ten lines were put over, and in an hour's time 49 cod were taken, the average weight of which was 10 pounds, and the average length 30 inches; 26 were males and 23 females. When the lines were first put over there was a continual tugging and biting at the hooks, but at the end of half an hour not a bite could be felt, although the lines remained out for an hour. It is not to be supposed that all the fish on this ground were caught; it was probably one of those freaks which cod frequently take in all localities by "slacking up," or ceasing to bite when they seem to be the most ravenous.

Hand-line fishing has been carried on in this locality in times past by the *Albatross*, and nearly, if not all, the local places investigated. In most places cod were abundant; scattering halibut were also taken.

Later in the day we came to anchor in Dutch Harbor. The seine was hauled in a small bay which forms a part of Iliuliuk Harbor, and 300 large herring taken; also a few flounders. Herring visit this bay each season, generally during the months of July and August. They are not numerous, and are seldom seen in large numbers. A dory load is frequently taken, however, but this would not be called large by fishermen. There is no place in the Aleutian group known to the writer where herring are sufficiently numerous to warrant the introduction of oil works or smokehouses. Southeastern Alaska is the only part of the Territory where herring are plentiful enough for these industries to be successfully carried on.

On July 13 deep-sea fishing was carried on in 59 fathoms at station 3502, in latitude $56^{\circ} 35' N.$, longitude $168^{\circ} 18' W.$ This trial was made while the ship was stopped in order to make some slight repairs to one of the engines. At first only two lines were put over, and at the end of a half hour 16 cod were caught. Finding that fish were plentiful, 11 more lines were brought into use and fishing carried on for another thirty minutes, at the end of which time 76 cod had been taken. The sexes were nearly equally divided, there being 30 males and 46 females. They were a fine-looking lot of fish, and quite uniform both in size and weight; average weight, 12 pounds; average length, 30 inches. Their livers were large and healthy; much more so, in fact, than usual. Had a fishing vessel been anchored on this spot, she

undoubtedly would have had excellent fishing, for at the end of the trial the fish were being caught "pair and pair."

The result of this fishing trial was somewhat different from one made in August, 1893, in latitude $56^{\circ} 34'$ N., longitude $167^{\circ} 9'$ W. On this occasion only 2 cod were caught. The scarcity of cod here was attributed to the ground being close to the Pribilof Islands. This, no doubt, was true at the time the trial was made, but this theory is not tenable now, for it will be found by looking on the chart that the ground where the last trial was made is comparatively near the above-mentioned islands. As a rule, each season the main body of the seal herd change their feeding-grounds, and where cod and other bottom species are found in plenty one year, it may be almost barren of life the next, for as soon as seals arrive and have selected some particular place for a feeding-ground economic bottom fish grow scarce or leave altogether, and do not appear again until most of the seals have left the sea.

In early spring, before the arrival of seals, cod are plentiful on all the local fishing-grounds in the vicinity of the Pribilof Islands, but later in the season hardly any fish are to be found on these grounds except scattering halibut. Late in the fall, after most of the seals have migrated south and before the ice forms, cod come in from outlying banks and are caught by the natives of the islands until prevented from doing so by the ice and stormy weather. It is not known whether cod remain about the Pribilofs after the ice appears in large quantities, there being no way of finding out after the fall is well advanced. Neither is it known whether or not cod remain on the banks in other parts of Bering Sea. The natives of Alaska are as little enlightened on this subject as anyone, and are indifferent about the whole matter, owing to the fact that their wants are supplied with but little effort on their part. The migratory habits of cod or halibut do not seemingly enter the minds of these people.

The writer has conversed, from time to time, with fishermen regarding the matter, but the knowledge they possess threw but little light on the subject. I am informed that dead cod are frequently seen in winter scattered along the coast on the Bering Sea side of the Alaskan Peninsula; but, so far as I have been able to learn, no attempt has ever been made to carry on fishing at this season on any of the banks along the Aleutian Islands or in Bristol Bay. That cod are much more numerous on the fishing banks off the Saunak and Shumagin Islands in winter than in summer is due, no doubt, to a large portion of the school leaving Bering Sea and repairing to these grounds. This is the generally accepted theory of most fishermen belonging to the above-named islands. It is very probable that this theory is correct, for while it is perfectly natural for cod to seek water of a low temperature, it is not, however, likely that they would long remain in a region where the water is chilled to an unusual degree by heavy masses of ice. This supposition is not substantiated by knowledge possessed concerning the winter habits of the Bering Sea cod.

As the season for carrying on fishing in this northern region is limited to a few months of each year, it will probably be a long time before much more is known of the winter habits of the cod which inhabit this locality; at least not until the time shall come when it will be expedient to send fishing vessels to these banks in winter. The high latitudes in which these fishing-grounds are situated practically preclude the possibility of this until a superior class of vessels is built. The vessels now engaged in the fishing industry of the Pacific coast are far from what would be required to carry on winter fishing with success. Even with a superior type of vessel a great deal of doubt is entertained in the minds of fishermen as to whether such an undertaking would be feasible, owing to the heavy gales which prevail. Not more than two or three fishing days could be expected out of a month. This, together with the heavy masses of ice which are swept over the fishing-grounds by wind and current, would make it a very hazardous calling, particularly so as the best fishing-grounds are comparatively near the coast, with but few available harbors in which to find refuge. Everything considered, Bering Sea offers no great inducement to fishermen during the winter months.

On the morning of July 15 the *Albatross* came to anchor in Ikatan Bay. This bay is situated close to the southern entrance to Isanotski Pass, which separates Unimak Island from the Alaskan Peninsula. While here, salmon, both large and small, flounders, sculpins, and a large quantity of sand lance, were taken with the drag seine. The beaches, however, are not very good for carrying on fishing with seines, there being many sunken rocks covered with sharp barnacles, which are very destructive to nets. Cod are plentiful in all parts of the bay; also small halibut. The hand lines took ten of the latter species, which averaged 5 pounds in weight and 23 inches in length.

Fishing and shore collecting were carried on at New Morzhovoi anchorage. Flounders, salmon, sculpins, and crabs were numerous. The best place for collecting is near the village, where nearly all species desired by the natives can be had within a stone's throw of their doors. The village is situated about 11 miles from the southern entrance to the pass, and has a population of about 150 persons. Like all other villages in Alaska, the occupations of the people are fishing and hunting. Nine bidarkas, carrying two men each, started out in the spring of 1894, and at the time of our visit had only captured nine sea-otters, one to each bidarka. The people here predict that, in a few years at the most, sea-otter will be exterminated, or so nearly so that it will not pay to hunt them.

In the spring, before the hunters start off on their annual hunt, and also on their return in the fall, they lay in a supply of cod and halibut, which are quite plentiful in and off the mouth of the pass. While these species play an important part in the way of food for these people, the amount cured for winter use is small as compared to the quantity of salmon stored away. After winter sets in, cod become very scarce

in all parts of the pass and do not return again until late in March or the first of April.

Fishing for salmon is almost wholly performed by the women and young girls of the village. The men and large boys take good care not to get wet. The male portion of the settlement seldom takes part in the fishing, and when it does it is only to direct the work, the laborious part of it being done by the women. This work is looked upon by the latter as a privilege rather than a hardship. If a native woman should allow her husband to perform this work for her, she would be looked down upon by all the other women of the village. The custom has been in vogue so long that it would be hard to change it.

Only one seine is owned, it being the common property of all. It is about 100 feet long by 12 feet deep; mesh, 3 inches. When the tide serves right it is hauled every other day, but is never set unless a chief or subchief is there to direct the work. In setting the seine no boat is used. The net is stretched to its full length, the head rope, foot rope, and twine being gathered up so that it will not foul when it is thrown into the water. When the seine ropes or hauling lines have been coiled down and made fast to the ends of the seine, the whole thing is picked up by the women and placed on their shoulders. They walk with their burden in single file about 6 feet apart. In the rear of the procession closely follow the chief, old men, boys, and little girls. On their way to the seining beach, which is situated about a third of a mile from the village, a sharp lookout is kept for signs of schooling salmon. Usually, however, one place is resorted to, a small indentation formed by a sudden curve in the beach, where salmon generally school in considerable numbers.

When a school is observed, which is thought sufficiently large to supply the wants of all, the head woman in the procession steps into the water and wades out as far as she can, all the others following. A course is taken so as to form a semicircle outside of the school. Not until the fish have been surrounded is the seine dropped into the water. As soon as it is thrown from the shoulders of the women they all seize hold of the seine ropes and begin to drag the net to the shore. Men, women, and children take part in this operation. Between the shouting of the men and women, the screaming of boys and girls, and the struggling and splashing about of the salmon trying to escape, the scene presented is indeed a novel one. Frequently a woman will lose her footing on the round, smooth rocks, slip, and go down for a moment. No attention, however, is paid to her, and she is pulled along in the net with the salmon until she again regains her feet. An accident of this kind is considered a good joke and affords considerable amusement to all. The water being comparatively shallow, the seine can not be hauled within 25 or 30 feet of the shore when a good catch of salmon has been secured, and in consequence more than half the fish have to be picked out one by one. This is somewhat difficult, as well as very wet work to engage in, for when several hundred salmon are inclosed

in a small space, all desperately struggling to make their escape, it takes a skillful hand to grab them one by one and throw them to the beach. Each person is entitled to the number of salmon he succeeds in dragging from the net. As may be supposed, this causes a greedy and wild competition. Standing to their knees, and frequently up to their waists, in water, they push each other about in a lively manner, each one trying to get the lion's share. There is no quarreling over the matter, everything being carried on in a good-natured manner.

As fast as the salmon land on the beach they are knocked on the head with a club by the boys, there always being a representative of each family to see that the different lots of salmon do not get mixed. After the seine has been emptied of its contents, the fish are strung in bunches of thirty or forty each, thrown into the water, and towed to the village, where they are cleaned. This work also falls to the lot of the women, but it is not commenced until they have put on dry clothing, when they form themselves into family groups close to the water's edge. They seldom leave their work until it is finished, unless driven indoors by heavy rain.

During our stay at New Morzhovoi a diligent search was made for clams. There are only a few places where this mollusk is found, and the natives keep them pretty well thinned out. We only succeeded in getting half a bucketful in one tide.

Besides the agent of the Alaska Commercial Company, there are three other white men who make their homes here; one follows sea-otter hunting for a living, and the other two hunt bear.

On the morning of July 20 the *Albatross* came to anchor on the south side of Ikatan Bay in 12 fathoms of water. While here 43 cod and 3 Alaska pollock were caught from the ship. The average weight of the cod was 9 pounds, length 29 inches. The following day 25 halibut were taken in 30 fathoms of water on a "spot" situated about half a mile from the shore and about the same distance from the ship. The ground covered but a small area—less than a third of a mile across it; the character of the bottom was sand and gravel. The boats that were anchored here, there being several belonging to the U. S. S. *Petrel* besides two from our ship, were obliged to keep close together in order to get any fish. If one boat happened to swing two or three times her length from the others, she would be off the ground altogether and not a bite would be felt. All the boats, however, did fairly well. The total weight taken by the two boats from the *Albatross* was 228 pounds, a fraction over 9 pounds each; average length, 27 inches.

Judging from our limited experience in this bay, I am of the opinion that all the fishing-grounds here are prolific. It is an excellent place for small boats to fish. This fact, however, has not been overlooked, for 14 miles from the *Albatross's* anchorage in East Anchor Cove two shore fishing stations have been located for many years. It is understood that these stations have recently been abandoned, not on account of the scarcity of fish, but for the reason that it has been found cheaper

to carry on the industry in vessels. It is also understood that nearly all the shore fishing stations in Alaska have been abandoned for the same reason.

The beaches in the vicinity of our anchorage were very poor for collecting on with a drag seine, there being many small sharp rocks scattered along the shore. The beach in many places ran off steep, so much so that the seine would not touch bottom except when close in. In most places the bottom was barren of all kinds of life, and only in a few instances was life found by turning over the rocks at low tide. A considerable number of specimens were, however, taken with the drag seine at the mouth of a small stream. The species caught were young salmon, salmon trout, flounders, sculpins, and sand-lance. No adult salmon were caught, although two individuals were observed about 100 yards from the shore. Young salmon and salmon trout were numerous; good catches of the latter species were taken by a party of anglers up the stream about a third of a mile from its mouth. All organic life seemed to be in and at the mouth of the stream; repeated hauls with the seine failed to catch anything elsewhere.

Late in the afternoon of July 22 the ship anchored off the entrance to Acherk Harbor, situated on the northwest end of Sannak Island. The bottom was at once tested with hand lines. The result was 3 cod and 3 small halibut. From parties on shore it was learned that few cod inhabit the local fishing-grounds at this season. They leave early in the spring, and do not appear until late in the fall. It is thought by the people here that they enter Bering Sea on leaving the region of the Sannaks. The cod fishery has been carried on at this harbor for a long time. The principal fishing-ground resorted to lies $4\frac{1}{2}$ miles to the northward of Petrof Point, in water varying in depth from 11 to 20 fathoms. There are many more local fishing-grounds around Sannak; also several more stations. These stations are owned and operated by Messrs. Lynde & Hough and the McCullum Fishing and Trading Company, both of San Francisco. The stations located at East Anchor Cove, previously mentioned, are also owned by the same parties. During the time we lay at anchor off Acherk Harbor the weather was too stormy to perform any work.

On the morning of July 25 the *Albatross* came to anchor in Dutch Harbor. The following day the drag seine was hauled in a small bay opposite Iliuliuk, and 300 salmon and some 30 herring taken. Most of the salmon were distributed among the various ships in the harbor. This was the last practical work performed for the season by the *Albatross* while the writer was on board. On the afternoon of the 29th he joined the sealing schooner *Louis Olsen*, of Astoria, Oreg., for a cruise in the Bering Sea.

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TABLES.

Record of soundings by the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895.

Date.	Serial hydrographic number.	Time of day.	Position.		Depth (in fathoms).	Character of bottom.	Temperatures.		
			Lat. north.	Long. west.			Air.		
							D. B.	Surf.	Botm.
Eastern portion of Bering Sea.									
1894.									
July 1	3499	3.20 a.m.	56 57 00	166 23 00	40	gn. M.	39	39	84.0
	3500	8.28 a.m.	56 54 00	167 51 00	44	gy. S.	39	39	.....
	3501	4.04 a.m.	57 52 00	167 19 00	37	gn. M.	42	43	37.0
	3502	1.50 a.m.	56 35 00	168 18 00	59	S. M.	43	41	.....
South of Unimak Island and north of Sannak Islands.									
15	3503	3.06 a.m.	54 24 00	163 51 00	43	crs. bk. S.	43	41	.....
15	3504	3.47 a.m.	54 26 00	163 44 00	54	fne. bk. S.	43	41	37.3
15	3505	4.29 a.m.	54 29 00	163 37 00	57	crs. bk. S. P.	43	41	37.0
15	3506	5.14 a.m.	54 30 30	163 29 00	59	bk. S. P.	43	40	37.0
15	3507	5.59 a.m.	54 32 30	163 21 00	60	bk. S.	43	40	39.0
15	3508	6.46 a.m.	54 34 30	163 14 00	41	bk. G.	43	39	38.0
15	3509	7.31 a.m.	54 36 00	163 06 00	46	gy. S.	43	39	41.0
15	3510	8.00 a.m.	54 37 00	163 02 00	25	gy. S.	43	39	40.0
15	3511	8.15 a.m.	54 37 30	163 01 00	30	gy. S.	43	39	39.0
15	3512	8.28 a.m.	54 38 00	162 59 00	38	rky.	43	39	40.0
15	3513	8.58 a.m.	54 40 30	163 00 00	30	bk. S. G.	43	39	38.0
15	3514	10.07 a.m.	54 40 30	163 08 00	46	gn. M.	43	39	38.0
22	3515	10.43 a.m.	54 40 00	163 01 00	23	rky.	48	41	40.1
22	3516	11.12 a.m.	54 38 00	162 58 30	50	bk. S. P.	47	40	.....
22	3517	11.39 a.m.	54 35 00	162 55 40	38	rky.	48	41	.....
22	3518	12.06 p.m.	54 32 30	162 53 00	33	Sh.	49	42	41.0
22	3519	1.13 p.m.	54 28 15	162 49 00	33	rky.	49	42	41.2
Northern portion of Bering Sea.									
Aug. 3	3520	10.04 a.m.	58 18 00	175 57 00	1,363	gy. oz. fne. S.	49	43	35.0
3	3521	2.35 p.m.	58 27 00	176 51 00	1,279	gy. oz. fne. S.	59	43	35.6
3	3522	7.27 p.m.	58 37 00	177 45 00	717	gn. M. S.	49	43	36.4
3	3523	9.18 p.m.	58 40 00	178 03 00	349	R. fne. gy. S.	50	43	38.0
3	3524	10.23 p.m.	58 42 00	178 12 00	369	fne. gy. S.	49	43	38.0
4	3525	12.24 a.m.	58 45 00	178 30 00	1,231	fne. gy. S.	48	43	35.0
4	3526	2.53 a.m.	58 48 00	178 49 00	1,830	gn. M. fne. S.	46	42	35.0
4	3527	5.38 a.m.	58 52 00	179 07 00	1,812	gy. oz.	46	42	35.1
4	3528	7.44 a.m.	58 56 00	179 25 00	1,838	gy. oz.	46	42	35.0
4	3529	12.05 p.m.	59 25 00	179 13 00	1,765	gy. oz. fne. S.	55	41	35.0
4	3530	4.13 p.m.	59 55 00	179 01 00	713	gy. oz. fne. S.	47	44	36.3
4	3531	8.09 p.m.	60 25 00	178 49 00	183	gn. M. fne. S.	48	44	38.0
7	3532	10.18 a.m.	58 00 00	172 58 00	61	fne. dk. S.	51	45	36.0
South of Alaska Peninsula.									
1895.									
June 13	3533	1.34 p.m.	55 31 00	159 23 00	100	fne. bk. G.	46	42	.....
Bering Sea, south of St. Paul Island.									
24	3534	11.01 a.m.	56 59 30	170 24 30	20	fne. bk. S.	36	37	.....
24	3535	11.20 a.m.	57 01 00	170 26 20	38	fne. bk. S. brk. Sh.	36	37	.....
24	3536	12.29 p.m.	57 04 00	170 30 45	33	rky.	36	37	.....
24	3537	12.51 p.m.	57 04 45	170 29 15	36	fne. bk. G.	36	37	.....
24	3538	1.16 p.m.	57 05 30	170 27 45	25	fne. gy. S. P.	40	35	.....
24	3539	1.30 p.m.	57 06 00	170 26 30	29	fne. gy. S. Sh.	40	35	.....
24	3540	1.48 p.m.	57 06 40	170 25 00	32	bk. F.	40	35	.....
24	3541	2.04 p.m.	57 07 30	170 23 20	10	fne. gy. S.	42	34	.....
Bering Sea between Pribilof and Commander Islands.									
26	3542	9.56 p.m.	50 53 00	172 15 00	66	fne. S. M.	37	39	38.9
27	3543	9.30 p.m.	56 00 00	177 30 00	2,056	No specimen	40	40	35.1
28	3544	5.32 a.m.	56 02 00	178 50 00	2,083	do.	40	40	35.1
29	3545	6.36 a.m.	55 45 00	179 57 00	2,086	br. M. oz.	40	39	35.1
East.									
30	3546	3.04 p.m.	55 59 00	178 43 00	2,105	br. M. oz.	43	41	35.1
30	3547	10.25 p.m.	55 55 00	177 12 00	2,113	br. M. oz.	40	41	35.6

NOTE.—The time of soundings is the time at which bottom was made.

Record of fishing trials of the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895.

Date.	Position.		Temp.		Time of day.	Number of station.	Depth.	Character of bottom.	Lines used.	Bait used.	Length of trial.	Fish taken.	Range in weight.	Average weight.	Range in length.	Average length.
	Lat. N.	Long. W.	Surf.	Bot.												
1894.																
July 4	At anchor 4' west of Wislow Island, north shore of Unalaska Island.		42°	41°	10 a. m.		7	fne. bk. S	10	Salt salmon.	60 minutes.	49 cod	6 1/2 to 20	10	27 to 36	30
13	56° 35'	168° 18'	43°	37°	1.50 p. m.		59	S. M.	13	Salt cod.	60 minutes.	76 cod	4 to 23	12	20 to 39	30
15	Ikatan Bay, Unimak Island. At anchor, NW. part.		Mean 49°		All day.	Hy. 3502	10	S. G.	3	do	All day.	10 halibut.		5		33
0	Ikatan Bay, Unimak Island. At anchor, south shore.		41°	39 1/2°	9.45 a. m.		12	bk. S. G.	6	Salt salmon.	60 minutes.	43 cod 3 Alaska pollock.	5 to 29	9	22 to 36	29
21	do.		Mean 49°		8 a. m. to 4 p. m.		30	S. G.	8	do	8 hours	25 halibut.	5 to 24	9	20 to 40	27
29	Acherk Harbor, Sanak Island. At anchor.		41°	39°	5 p. m.		15	S. G.	4	Salmon and halibut.	60 minutes.	3 cod 3 halibut.	7 to 9 7 to 9	8 8	24 to 30 22 to 27	26 24

INVESTIGATIONS OF THE ALBATROSS.

Meteorological and cruising record of the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895.

Date.	Meridian positions.		Dis- tance steamed.	Barometer.		Temperatures.			State of the weather.	Direction and force of wind.	Amount of rain/fall.	State of the sea.	Currents.						
	Lat. N.	Long. W.		Max.	Min.	Air.		Water sur- face.					Setting to the—	Knots per day.	Number of hours prevailing weather.				
						Dry bulb.	Wet bulb.												
						MAX. MIN.	MAX. MIN.									MAX. MIN.			
1894.	° ' "	° ' "	Knots.																
July 1	57 22 00	167 36 00	186.7	30.29	30.16	52	38	51	37	42	36	Cloudy and rainy to foggy.	NW, 2-4-2	Light.	Smooth	N.5° W	4.0	20	1
2	55 17 00	165 05 00	203.4	30.28	30.22	46	41	45	40	43	39	Foggy; thick	WNW, 2-3; WSW, 1-2	None	Smooth			16	2
3	Akutau Harbor, Akutau Island.	170.7	30.37	30.28	49	41	48	46	43	39	39	Overcast and foggy.	S'd and W'd, 3-1	None	Smooth			16	3
4	54 06 00	166 48 00	167.2	30.44	30.37	53	41	51	38	41	39	Foggy; thick	SW, 1; calm; E, 1; calm.	None	Smooth			12	4
5	Dutch Harbor, Un- alaska.	21.0	30.40	30.29	49	45	48	44	45	45	45	Foggy to fair and pleasant.	Calm; NE, 2-4; S'd, 2.	None	Smooth				5
6	do		30.27	30.20	50	43	56	42	50	45	45	Fair and pleasant.	SSW, 3; ENE, 4; S'd, 3.	None	Smooth				6
7	do		30.32	30.26	47	43	46	41	46	45	45	Fair and pleasant to foggy.	N. by E, 3	None	Smooth				7
8	54 30 00	167 04 00	43.2	30.38	30.32	47	43	46	42	46	42	Foggy in a. m.; misty and thick in p. m.	Calm; SSW, 2; SSE, 4.	Light	Smooth			14	8
9	North anchorage, St. George Island.	162.3	30.32	30.14	49	43	47	43	42	38	38	Overcast and foggy to rainy.	SSE, 4-8	Light.	Moderate to rough.			0	9
10	do		30.17	30.10	46	42	45	41	38	38	38	Overcast, rainy, and stormy.	S. by E. and SSE, 8-10.	Heavy.	Rough				10
11	do		30.10	29.76	45	43	44	43	39	38	38	do	SSE, 10-8; SE, 6	Heavy.	Rough				11
12	56 42 00	169 42 00	6.9	30.24	29.70	44	42	43	42	40	38	Overcast, misty, and stormy.	S. to SW, 8-6; SW, 4	Moderate	Rough			0	12
13	56 35 00	168 18 00	148.6	30.32	30.24	49	38	48	38	44	37	Overcast; foggy mid- night to 8 a. m.	S'd, 2; S'd and E'd, 1.	None	Smooth			18	13
14	54 56 00	165 21 00	157.2	30.35	30.20	49	41	49	40	44	39	Cloudy; mist and fog at times.	E. to NE, 1; N'd and W'd, 2; N'd, 3.	Light.	Smooth	N. 60° W	18.0	18	14
15	51 48 00	163 23 00	143.4	30.24	30.29	47	43	46	43	41	38	Overcast; misty dur- ing a. m.	N'd, 4; NE, 3-2; varia- ble, 1; calm.	Light.	Smooth			8	15
16	54 48 00	163 23 00		30.20	30.02	47	43	46	43	39	38	Overcast, fog and rain.	Calm; variable 1.	Moderate	Smooth				16
17	Mozkrovi Village, Traders Cove, Isanotski Strait.	9.8	30.29	30.13	47	43	46	42	38	38	38	Rainy and misty to clearing.	W., 4-5-3.	Moderate	Smooth				17
18	do		30.39	30.36	50	44	50	43	39	38	38	Fair to overcast and rainy.	W., 2; calm; E, 1	Moderate	Smooth				18
19	do		30.37	30.23	57	47	56	46	42	39	38	Overcast, with mist and rain.	Calm; variable, 1-2; W'd, 1.	Moderate	Smooth				19

Meteorological and cruising record of the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895—Continued.

Date.	Meridian positions.		Barometer.		Temperatures.				State of the weather.	Direction and force of wind.	Amount of rainfall.	States of the sea.	Currents.		1900 Number of hours clearing weather.				
	Lat. N.	Long. W.	Dis- tance steamed.	Max.	Min.	Air.		Water sur- face.					Setting to the—	Knots per day.					
						Dry bulb.	Wet bulb.									Number of hours clearing weather.			
																	Max.	Min.	
1894.																			
Aug 14	59 11 00	158 00 00	Knots.	29.66	29.24	51	48	50	47	45	44	Stormy and rainy, to clearing.	W., 3-6; WSW., 4-7; SW., 5-3.	Moderate			14		
15	do	do		29.74	29.63	55	47	54	46	47	44	Fair and pleasant.	SW., 4-3; S'd, 1; NNW., 2; W., 2.	None			15		
16	do	do		29.81	29.72	50	48	49	46	45	41	Cloudy, with passing showers.	S'd and W'd, 3-5.	Light.			16		
17	54 01 00	166 28 00	8.3	29.81	29.70	55	45	53	45	42	40	Fair to foggy and misty.	W., 3-2; WSW., 4-6-2.	Light.	Rough		0	17	
18	55 28 00	169 23 00	158.8	29.82	29.62	47	45	47	45	45	41	Foggy and misty to cloudy.	WSW., 2; NW. by W., 2; NW., 3.	Light	Moderate to smooth.	S. 20° E.	16.0	14	18
19	North anchorage, St. George Island.		175.0	29.82	29.68	46	47	45	45	44	41	Fair to misty and rainy.	NW., 3; Calm; S'd and E'd, 4-8-5.	Moderate	Smooth to rough.			4	19
20	57 06 00	171 37 00	182.2	29.76	29.83	47	46	46	45	45	41	Rainy, misty, and stormy.	S'd, 2; W'd, 5; W. by N., 7-9.	Moderate	Rough	S. 40° E.	5.2	0	20
21	57 43 00	171 58 00	45.4	30.14	29.76	47	44	46	43	42	40	do	W. by N., 7-9-5.	Moderate	Rough	S. 38° E.	4.5	0	21
22	58 24 00	173 07 00	78.3	30.24	30.16	46	45	45	42	42	41	Clearing to fair and pleasant.	WNW., 7-4; SW., 2; SE., 3.	None	Rough to moderate.	East	7.9	6	22
23	57 49 00	173 34 00	180.0	30.24	30.16	47	43	45	42	42	42	Fair and pleasant.	S'd and E'd, 2-5.	None	Smooth	N. 15° W.	16.5	6	23
24	57 07 00	173 45 00	148.1	30.14	29.66	47	45	46	44	44	41	Overcast and rainy; stormy.	S'd and E'd, 5-10-7.	Heavy	Rough	2 days N. 23°		0	24
25	56 13 00	172 44 00	87.4	29.82	29.71	48	47	48	46	43	42	Overcast and misty.	SW., 4-8.	Light	Moderating	E.	33.0	0	25
26	55 08 00	171 26 00	185.6	29.91	29.81	50	45	50	45	44	41	Overcast, with rain and mist.	SW., 8-4; S'd, 4-2.	Moderate	Rough to moderate.	S. 37° W.	3.8	0	26
27	54 05 00	166 52 00	204.2	29.89	29.76	47	46	47	46	43	41	Overcast and misty.	S'd and E'd, 3-2.	Light.	Smooth	N. 45° W.	6.0	0	27
28	Dutch Harbor, Unalaska.		24.2	29.82	29.70	54	46	54	46	44	42	Cloudy with rain latter part.	Calm; E., 2; calm.	Light.					28
29	do			30.13	29.74	50	47	49	46	44	42	Rainy to clearing.	Calm; NW., 1.	Light.					29
30	do			30.20	30.16	50	46	49	45	43	42	Fair and pleasant.	NE. by N., 2; calm; S'd and E'd, 2-1.	None					30
31	do			30.35	30.18	59	47	59	46	44	42	do	SW., 3; variable, 1; NW., 2; calm.	None					31
Sept. 1	Dutch Harbor			30.33	30.03	55	46	55	45	43	42	Fair and pleasant.	Calm; NE., 2; calm.	None					1
2	do			30.02	29.89	54	46	50	45	46	42	do	Calm; E., 2; calm.	None					2
3	do			29.88	29.51	51	45	50	43	44	42	do	Calm; SE., 2-4-2; calm.	None					3

4	54 13 00	166 21 00	23.6	29.60	29.52	50 45	50 45	41 43	40	Fair to overcast and misty.	Variable, 1; WNW, 1-3; variable, 1.	Light	Smooth			8	4
5	56 44 00	165 21 00	204.4	29.60	29.51	49 45	46 45	42 40	40	Cloudy in a.m.; misty and rainy in p.m.	SE, 2-3; WSW, 3-5	Light	Smooth	S. 46° W	11.4	2	5
6	54 47 00	166 23 00	194.8	29.83	29.67	49 45	49 45	43 40	40	Overcast, with rain and mist.	S'd, 5-3; SSE, 3; SSW, 4-1; calm.	Moderate	Smooth	North	9.0	8	6
7	Dutch Harbor, Unalaska.		67.3	30.05	29.84	50 45	52 47	42 40	40	Fair generally; occasional showers.	Calm; SSW, 1-3; S by W, 1; calm.	Light					7
8	do		30.23	30.06	50 46	50 46	42 40	40	do	Calm; W'd, 1-3; S'd and W'd, 3-4.	Light	Smooth				4	8
9	55 47 00	170 10 00	181.9	30.34	30.24	49 46	49 46	44 42	40	Fair and pleasant.	SSW, 3; SW, 2-3	None	Smooth	S. 37° W	7.5	12	9
10	57 43 00	169 49 00	235.8	30.36	30.16	57 44	56 44	43 41	40	Misty till noon; then fair and pleasant.	W'd, 1; S'd, 3; SE, 2, E, 4-6.	Light	Smooth	S. 47° W	7.3	16	10
11	56 34 00	169 49 00	207.5	30.03	29.66	46 44	46 44	42 39	39	Rainy, misty, and stormy.	NE, 5-7-4	Heavy	Moderate			0	11
12	Village Cove, St. Paul Island.		45.6	30.08	29.69	47 44	47 44	40 40	40	Rainy and stormy to clearing.	NNE, 3-5; N, 2-1	Moderate	Moderating			0	12
13	56 36 00	169 20 00	50.8	30.08	29.80	46 43	46 43	42 39	39	Fair to overcast and rainy.	NE, 2; E, 3-5	Moderate	Smooth			4	13
14	54 18 00	166 54 00	201.9	30.07	29.76	50 46	50 46	43 40	40	Overcast and misty, to clearing.	E, 5-7; NE, 6-3; NW, 2; calm.	Light	Moderate to smooth.	N. 32° W	23.3	0	14
15	Dutch Harbor, Unalaska.		36.8	30.08	29.86	51 45	50 45	42 40	40	Fair to misty and rainy.	Calm; variable, 1; calm.	Moderate					15
16	do		29.33	29.73	50 45	50 45	42 41	40	Fair and pleasant.	Calm; SW, 2-5; S, 1	None					16	
17	54 24 00	166 08 00	41.6	29.70	29.45	54 43	53 43	42 40	40	Overcast, with frequent rain squalls.	SW, 3-5; calm; N'd, 1; SW, 2-5.	Light	Smooth			0	17
18	54 37 00	166 30 00	94.3	29.66	29.54	46 44	46 44	41 39	39	Overcast and rainy to clearing.	SW, 2-5; WSW, 4-2	Light	Moderately swell.			0	18
19	Dutch Harbor, Unalaska.		50.6	29.92	29.78	50 41	49 41	41 40	40	Overcast and cloudy; rain 1 to 3 p.m.	Calm; variable, 1-2	Light					19
20	53 56 00	166 29 00	3.0	30.30	29.94	50 44	49 43	42 40	40	Fair and pleasant.	SSW, 1; calm; NW, 2-1	None	Smooth			8	20
21	55 10 00	161 52 00	209.9	30.53	30.31	50 42	57 42	45 39	39	do	Variable, 3-2	None	Smooth			16	21
22	55 35 00	155 41 00	245.5	30.54	30.38	53 45	53 45	44 43	43	do	NE, 3; East, 4	None	Smooth	N. 78° W	14.5	16	22
23	56 11 00	150 48 00	187.2	30.34	29.50	50 47	49 46	45 42	42	Fair to rainy and stormy.	East, 4-7; NE, 6-8; SE, 6-2.	Moderate	Rough	N. 60° W	18.0	0	23
24	56 22 00	148 57 00	103.0	29.52	29.42	49 47	49 47	45 43	43	Overcast, with drizzling rain.	S'd and W'd, 3; NNW, 4-2.	Heavy	Moderately swell.	N. 86° W	15.5	0	24
25	56 37 00	143 40 00	196.0	29.57	29.46	54 48	53 48	46 44	44	Overcast and rainy to clearing.	ESE, 5-6; ENE, 3; NNE, 4.	Light	Moderating	S. 81° W	20.4	0	25
26	56 47 00	137 43 00	223.6	29.67	29.58	55 45	53 44	47 44	44	Clear and pleasant.	N'd and E'd, 4; N, 3-2.	None	Cross to smooth.	S. 82° W	28.0	0	26
27	Sitka, SE. Alaska.		97.9	29.72	29.64	50 42	49 42	47 44	44	Fair to overcast and rainy.	Eastward, 2-1	Light					27
28	do		29.75	29.66	64 47	62 47	49 46	46	46	Clear and pleasant.	Calm; Eastward, 2-1	None					28
29	Peril Strait, SE. Alaska.		26.3	29.84	29.60	55 42	54 41	47 45	45	do	Calm; variable, 1	None	Smooth				29
30	Off Douglas Id., SE. Alaska.		143.0	29.62	29.51	47 45	47 45	42 40	40	Overcast and rainy.	E'd, 2; squalls, 6; SE, 4-1.	Heavy	Smooth				30
Oct. 1	56 09 00	132 58 00	107.0	30.03	29.64	48 44	48 44	42 40	40	Cloudy; frequent showers.	SE, 4-2; calm.	Moderate	Smooth	Local			1

Meteorological and cruising record of the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895--Continued.

Date.	Meridian positions.		Distance steamed.	Barometer.		Temperatures.				State of the weather.	Direction and force of wind.	Amount of rainfall.	State of the sea.	Currents.					
	Lat. N.	Long. W.		Max.	Min.	Air.		Water surface.	Setting to the-					Knots per day.	Number of hours sailing weather.				
						Dry bulb.	Wet bulb.									Max.	Min.		
			Knots.																
1894.																			
Oct. 2	55 42 00	132 19 00		119.5	30.06	29.83	67	44	63	43	48	43	Fair and pleasant.	Calm; SE, 2; NE 2; NW 2	None	Smooth	Local	2	
3	53 55 00	130 10 00		158.2	30.30	29.83	54	46	54	46	44	44	do	NW, 3; E, 1; SE, 2; calm.	None	Smooth	Local	3	
4	52 32 00	128 29 00		124.4	30.30	30.14	51	47	50	46	47	45	Fair to cloudy and rainy.	NW, 2; calm; NW, 1; calm.	Moderate	Smooth	Local	4	
5	51 06 00	127 50 00		107.9	30.36	30.21	69	45	61	45	47	44	Clear and pleasant.	Calm; N'd and W'd, 2-3; calm.	None	Smooth	Local	5	
6	50 19 00	125 23 00		127.1	30.46	30.38	57	43	56	41	51	46	Fair and pleasant.	Calm; S'd and E'd, 1; calm.	None	Smooth	Local	6	
7	48 23 00	122 48 00		204.8	30.42	30.00	56	47	55	47	51	47	Misty to fair and pleasant.	SE, 1; calm.	Light	Smooth	Local	7	
8	New Whatcom. Wash.			26.5	30.31	29.96	59	50	58	49	49	47	Fair and pleasant.	S, 1-2; calm; WSW, 1; calm.	None	Smooth	Local	8	
9	do			30.49	30.32	30.32	56	49	56	48	49	46	do	Calm; SE, 2; S, 1; calm.	None	Smooth	Local	9	
10	Victoria, B. C.			48.9	30.31	30.16	55	47	54	47	48	41	do	Calm; variable, 1; calm; SW, 2-1.	None	Smooth	Local	10	
11	46 34 00	124 49 00		185.4	30.30	30.19	57	50	57	50	50	42	do	SSW, 1; NE, 1-2	None	Smooth		14, 11	
12	42 59 00	124 41 00		232.7	30.25	30.20	54	52	54	52	50	41	do	NNE, 2; SE, 2; S'd, 2; SE, 2-4.	None	Smooth	N. 28° W	20.0	14, 12
13	39 32 00	124 10 00		232.5	30.24	30.04	61	52	59	52	46	43	do	S'd and E'd, 1; variable, 1; W'd, 4.	None	Smooth		14, 13	
14	Sausalito Harbor, California.			150.3	30.04	29.90	65	53	61	54	47	44	do	Calm; E, 1; SW, 1; calm.	None	Smooth		14	
15	do			30.00	29.85	29.85	75	58	74	58	60	46	do	Calm; W'y, 1; calm.	None	Smooth		15	
16	do			30.00	29.85	29.85	62	56	62	55	60	59	do	SW, 2; calm; WSW, 2-5-2.	None	Smooth		16	
17	San Pablo Bay, California.			10.4	29.88	29.75	65	56	64	56	64	60	do	Calm; WNW, 3; calm.	None	Smooth		17	

Meteorological and cruising record of the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895—Continued.

Date.	Meridian positions.		Distance steamed.	Barometer.		Temperatures.			State of the weather.	Direction and force of wind.	Amount of rainfall.	State of the sea.	Currents.							
	Lat. N.	Long. W.		Max.	Min.	Air.		Water surface.					Setting to the	Knots per day.	Direction of surface current.	Force of surface current.				
						Dry bulb.	Wet bulb.										Drift	Direction	Force	
	Drift	Direction		Force																
1895.	o' "	o' "	Knots.																	
June 16	Dutch Harbor, Unalaska.		292.4	30.37	30.01	43	39	45	39	41	39	Overcast, foggy, and misty.	W'd. 4-3; WNW, 2-1	Light.	Smooth		0	16		
17	Hinlink Harbor, Unalaska.		30.44	30.39	47	39	46	39	42	40	40	Overcast, with rain and mist.	Calm; ENE, 1; calm	Moderate				17		
18	do		30.45	30.34	47	41	47	41	45	40	40	Overcast and misty to clearing.	Calm; NE veering to SW, 1.	Light.				18		
19	do		30.35	30.21	51	40	50	40	45	42	42	Misty and rainy to fair and pleasant.	Calm; SSE, 1; calm.	Light.				19		
20	do		30.21	30.04	46	42	47	42	45	42	42	Overcast but pleasant.	Variable 1	None				20		
21	do		30.03	29.84	49	43	49	43	45	44	44	do	Calm; SW, 1; variable 1; calm.	None				21		
22	do		29.89	29.83	50	44	50	44	45	43	43	Overcast, with fog and mist at times.	Calm; NE, 1; calm.	Light.				22		
23	54 38 00 167 34 00		58.0	30.14	29.88	43	41	43	40	44	41	Overcast and misty to cloudy.	Calm; N'd and E'd. 3-2.	Light.	Smooth			16	23	
24	57 02 00 170 32 00		187.0	30.17	30.09	40	31	40	31	41	32	Overcast and foggy; cold.	SSE, 3; Nly, 1; calm.	None	Smooth			14	24	
25	Village Cove, St. Paul Island.		9.5	30.08	29.98	36	30	36	30	34	32	Overcast and foggy.	W'd. 1 and 2	None	Smooth				25	
26	do		30.01	29.98	36	34	38	34	38	33	33	do	W'd. 1 and 2	None	Smooth			8	26	
27	56 21 00 173 22 00		172.0	30.04	30.00	41	37	41	37	42	39	Overcast, but pleasant.	WSW, 1; SW by S, 2.	None	Smooth	N. 72° E.	11.0		20	27
28	56 00 00 173 45 00 East.		148.0	29.98	29.72	42	40	42	40	41	40	Overcast and misty to stormy.	SW, 3-5-5	Moderate	Smooth to rough.			0	28	
30	55 43 00 170 05 00		43.0	29.74	29.66	43	39	43	39	41	39	Overcast and stormy; moderating.	S'd and W'd 4-2	Light.	Moderate to smooth.	S. 68° E.	25.0	14	30	
	Total		13,181.3																	

112 days steaming during fiscal year 1895.

Record of fur-seals observed at sea by the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895.

Date.	Time of day.	Temperatures.		Position.			Seals seen.		Remarks.	
		Air, D. B.	Sea, surf.	Lat. N.	Long. W.	No.	Sizes.			
1894.				o	i	c				
July 1	9.20 a. m.	40	39	56	58	167	42	1	Medium	Traveling away from ship.
1	12.45 p. m.	39	39	57	28	167	32	1	Small	Sleeping.
3	4.11 a. m.	42	39	55	01	165	58	1	do	Jumping and diving.
4	3.43 a. m.	41	39	54	13	167	00	3	Medium	Do.
4	7.30 a. m.	41	39	54	03	166	54	2	do	Do.
8	1.55 p. m.	45	45	54	41	167	17	1	do	Do.
8	3.00 p. m.	47	45	54	59	167	27	1	Small	Do.
8	4.19 p. m.	47	45	55	00	167	39	1	Medium	Do.
9	5.48 a. m.	45	41	56	31	168	57	1	do	Do.
12	3.58 p. m.	43	40	57	01	170	15	1	Large	Do.
12	4.32 p. m.	43	40	57	05	170	08	1	Medium	Do.
12	5.15 p. m.	44	39	57	09	170	04	1	do	Do.
13	4.47 a. m.	38	38	56	58	169	15	1	do	Do.
13	4.55 a. m.	38	38	56	57	169	06	2	do	Do.
13	11.25 a. m.	40	42	56	35	168	18	1	do	Swimming to westward.
13	2.30 p. m.	47	43	56	35	168	18	1	Small	Playing near ship while sounding.
13	6.52 p. m.	43	44	56	24	167	55	1	Medium	Jumping and diving.
13	7.35 p. m.	43	44	56	20	167	47	1	Large	Do.
13	7.43 p. m.	43	44	56	18	167	40	2	Medium	Do.
13	7.50 p. m.	42	43	56	17	167	45	2	do	Do.
13	8.25 p. m.	42	43	56	15	167	37	1	do	Do.
13	8.40 p. m.	42	42	56	14	167	35	1	do	Do.
30	3.45 p. m.	47	43	54	10	166	42	1	do	Do.
30	7.50 p. m.	46	42	54	36	167	30	1	do	Sleeping.
31	6.20 a. m.	46	40	54	48	169	23	1	do	Jumping and diving.
31	10.40 a. m.	48	40	55	00	170	28	1	do	Traveling to northward.
31	12.27 p. m.	48	41	55	06	170	50	1	Small	Traveling to southeast.
31	1.52 p. m.	50	41	55	18	170	56	1	Medium	Diving.
31	5.57 p. m.	49	42	55	48	171	13	1	Large	Do.
Aug. 31	8.23 p. m.	49	42	56	06	171	18	1	Medium	Jumping and diving.
1	3.27 a. m.	48	40	56	39	170	23	1	do	Do.
1	6.15 a. m.	48	40	56	42	169	57	1	do	Do.
1	6.25 a. m.	48	40	56	42	169	55	1	do	Do.
1	6.45 a. m.	48	40	56	41	169	52	1	do	Do.
1	12.00 m. to 6.00 p. m.			East shore, St. Paul Island.						Common near rookeries.
2	4.36 a. m.	47	39	59	38	171	21	1	Medium	Jumping and diving.
2	5.40 a. m.	47	40	56	35	171	29	1	do	Do.
2	2.45 p. m.	50	43	56	19	173	23	1	Small	Traveling to northward and eastward.
2	5.32 p. m.	49	42	56	36	173	46	1	do	Traveling to westward.
2	6.00 p. m.	49	42	56	39	173	45	2	Medium	Playing.
2	7.37 p. m.	49	42	56	49	173	58	2	do	Jumping and diving.
3	10.22 a. m.	50	43	58	19	176	00	1	do	Do.
3	2.30 p. m.	50	43	58	27	176	51	1	Small	Playing near ship while sounding.
6	9.55 a. m.	48	43	59	13	174	45	1	Large	Traveling to southward and eastward.
6	11.00 a. m.	48	43	59	11	174	27	1	Small	Sank.
6	1.15 p. m.	49	43	59	07	173	53	3	do	Playing.
6	2.55 p. m.	49	43	59	04	173	27	4	do	Do.
6	4.02 p. m.	49	43	59	02	173	10	1	Medium	Do.
6	6.30 p. m.	49	43	58	57	172	32	1	Large	Jumping and diving.
6	6.35 p. m.	49	43	58	57	172	31	2	Medium	Do.
6	7.05 p. m.	49	43	58	55	172	24	1	Small	Do.
6	7.17 p. m.	49	43	58	54	172	18	1	do	Do.
7	3.50 a. m.	47	41	58	24	172	02	1	do	Do.
7	8.35 a. m.	50	44	58	07	172	42	1	do	Do.
7	9.40 a. m.	51	45	58	02	172	54	1	Medium	Do.
7	9.42 a. m.	51	45	58	02	172	54	2	do	Traveling to southwest.
7	9.55 a. m.	51	45	58	01	172	56			Abundant; many sleeping, others scratching.
7	10.10 a. m.	51	45	58	00	172	58			Abundant; lowered seal boat; fishing station; Hyd. 3532.
7	11.57 a. m.	54	45	57	57	173	05	5	Medium	Jumping and diving.
7	1.55 p. m.	52	45	57	47	173	26	2	do	Sleeping.
7	4.57 p. m.	50	44	57	33	174	03	1	do	Jumping and diving.
7	6.15 p. m.	50	44	57	25	174	23	1	Small	Playing.
7	7.00 p. m.	50	44	57	23	174	25	1	Medium	Do.
8	10.25 a. m.	50	44	57	05	172	46	2	Small	Do.
8	11.45 a. m.	51	45	56	54	172	43	1	do	Do.
8	12.35 p. m.	51	45	56	49	172	43	1	Medium	Jumping and diving.
8	1.05 p. m.	51	45	56	46	172	43	1	do	Do.
8	4.05 p. m.	51	45	56	40	172	41	1	do	Do.
8	5.00 p. m.	50	45	56	32	172	40	3	do	Playing.

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Record of fur-seals observed at sea by the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895—Continued.

Date.	Time of day.	Temperatures.		Position.		Seals seen.		Remarks.
		Air, D. B.	Sea surf.	Lat. N.	Long. W.	No.	Sizes.	
1894.								
Aug. 8	5.25 p. m.	50	45	56 32	172 46	1	Large.....	Jumping and diving.
	7.40 p. m.	50	44	56 25	173 40	1	Medium..	Do.
	5.25 a. m.	49	44	55 57	172 26	1	do	Do.
	9.00 a. m.	49	44	55 47	171 57	1	do	Playing.
	9.50 a. m.	49	44	55 45	171 45	3	do	Do.
	12.00 a. m.	49	44	56 00	171 52	1	do	Do.
	12.40 p. m.	49	44	56 05	171 55	1	Small.....	Do.
	2.34 p. m.	49	44	56 21	172 02	1	Medium..	Jumping and diving.
	5.12 p. m.	50	44	56 44	172 11	1	do	Do.
	5.57 p. m.	50	44	56 44	172 18	1	do	Do.
	6.30 p. m.	50	44	56 44	172 25	1	do	Do.
	6.45 p. m.	49	44	56 44	172 28	1	do	Do.
	4.00 a. m.	48	44	56 01	171 57			Abundant, over 200 counted; most sleeping, some playing, some scratching.
10	to			to	to			
	8.00 a. m.	50	44	55 51	171 44			Abundant, majority sleeping.
10	12.22 p. m.	54	45	55 38	171 09	1	Medium..	
	12.30 p. m.	55	46	55 37	171 03			Abundant, over 150 counted; majority sleeping, some traveling away from ship.
10	1.00 p. m.	57	46	55 35	170 40			
	to			to	to			
	3.00 p. m.	62	46	55 25	170 20			Sank.
10	7.14 p. m.	63	48	55 18	169 44	2	Small.....	
	5.00 a. m.	47	44	54 45	168 11	1	do	Jumping and diving.
	6.20 a. m.	47	44	54 37	167 55	1	do	Do.
	11.00 a. m.	48	44	54 13	167 06	2	Medium..	Sleeping.
	2.00 p. m.	48	41	54 08	166 43	1	do	Traveling to eastward.
	7.25 a. m.	46	42	54 55	168 54	2	do	Sank.
	11.10 a. m.	47	45	55 22	169 19	2	do	Sleeping.
	11.35 a. m.	47	45	55 26	169 22	1	do	Playing.
	5.50 p. m.	47	44	55 35	170 36	1	do	Sank.
	5.11 a. m.	48	43	56 29	170 44	1	Small.....	Do.
	5.15 a. m.	48	43	56 29	170 42			Common; majority medium size; traveling westward.
19	to			to	to			
	7.45 a. m.	46	43	56 30	170 03			Jumping and diving.
19	3.25 p. m.	47	42	56 45	170 25	1	Medium..	
	4.35 p. m.	48	43	56 48	170 45	3	do	Traveling to eastward.
	4.45 p. m.	48	43	56 49	170 48	1	Small.....	Sank.
	5.00 p. m.	48	43	56 50	170 51	2	do	Traveling to eastward.
	6.20 p. m.	48	43	56 50	170 59	1	Medium..	Jumping and diving.
	6.00 a. m.	47	41	57 02	171 52	1	Small.....	Do.
	8.25 a. m.	46	41	57 03	171 50	1	do	Do.
	4.30 p. m.	46	43	57 02	171 21	1	Medium..	Do.
	6.30 p. m.	46	43	57 06	171 37	1	Large.....	Sank.
	5.15 p. m.	45	41	57 51	172 00	2	Small.....	Playing near ship.
	1.30 p. m.	44	42	58 23	173 30			Common; majority medium size; some sleeping, others going to northwest.
22	to			to	to			
	4.00 p. m.	45	42	58 22	174 03			Jumping and diving.
22	4.25 p. m.	45	42	58 21	174 21	1	Small.....	
	5.00 a. m.	43	42	58 04	172 48	2	Medium..	Do.
	5.30 a. m.	43	42	57 59	172 49	1	do	Do.
	6.40 a. m.	43	42	57 48	172 51	3	Small.....	Do.
	10.00 a. m.	44	42	57 42	173 18	1	do	Playing near ship; boarding Mary Ellen.
	11.50 a. m.	45	41	57 07	173 45	2	do	Jumping and diving.
	9.00 a. m.	47	42	56 24	172 42	1	Medium..	Do.
	9.15 a. m.	47	42	56 23	172 44	1	do	Do.
	11.30 a. m.	48	42	56 13	172 44	3	do	Playing near ship; boarding Walter A. Earle.
	5.00 p. m.	47	43	55 45	173 21	1	Small.....	Playing.
	2.25 p. m.	46	44	54 45	171 13	1	do	Jumping and diving.
	4.85 p. m.	46	43	54 33	171 66	1	Medium..	Do.
	5.35 p. m.	46	43	54 25	171 02	1	do	Do.
	8.10 a. m.	46	43	54 09	167 46	1	do	Traveling away from ship.
	9.15 a. m.	46	42	54 38	167 28	3	do	Sleeping.
	9.50 a. m.	46	42	54 07	167 20	2	do	Do.
	10.00 a. m.	46	42	54 07	167 16	1	Small.....	Playing.
Sept. 7	9.17 a. m.	48	42	56 40	165 04	1	do	Sleeping.
	9.00 a. m.	46	42	55 00	168 30	1	Medium..	Jumping and diving.
	2.30 p. m.	47	42	54 33	166 26	2	do	Do.
	2.45 p. m.	47	42	54 27	166 26	3	Small.....	Do.
	8.30 a. m.	48	42	55 28	169 17			Common; majority small; some sleeping, others diving and playing.
9	to			to	to			
	12.00 m.	49	43	55 47	170 10			Sank.
9	4.10 p. m.	48	43	55 58	171 12	1	Medium..	
	4.30 a. m.	47	41	57 35	171 18			Common; majority medium; mostly jumping and diving; few sleeping.
10	to			to	to			
	8.00 a. m.	57	42	58 03	170 52			

Record of fur-seals observed at sea by the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895—Continued.

Date.	Time of day.	Temperatures.		Position.		Seals seen.		Remarks.
		Air, D. B.	Sea, surf.	Lat. N.	Long. W.	No.	Sizes.	
1894.				° ' "	° ' "			
Sept. 10	10.00 a. m.	48	42	57 53	170 20	1	Medium ..	Sank.
10	2.30 p. m.	50	42	57 44	169 33	1	Small	Jumping and diving.
10	5.46 p. m.	46	42	57 45	168 28	2	.....do	Do.
11	6.00 a. m.	46	42	56 12	168 20	1	Large	Do.
11	9.15 a. m.	47	42	56 29	169 34	1	Medium	Do.
11	12.25 p. m.	45	40	56 38	169 53	2	Small	Do.
11	4.00 p. m.	45	40	57 00	170 23	.....	.....	Common; near Otter Island.
13	11.30 a. m.	47	40	56 40	169 25	5	Medium ..	Near St. George Island.
13	1.30 p. m.	46	40	56 29	169 07	1	Small	Sank.
13	7.00 p. m.	46	40	55 46	168 45	2	Medium ..	Playing.
17	1.15 p. m.	47	41	54 32	165 56	3	Small	Jumping and diving.
18	9.00 a. m.	45	40	54 22	166 04	1	.....do	Do.
1895.								
June 13	5.00 p. m.	44	41	Popof Strait, Shumagin Island.		1	Medium ..	Traveling away from ship.
24	10.00 a. m.	36	37	56 50	170 20	3	.....do	Do.
24	4.00 to 8.00 p. m.	37	34	Village Cove, St. Paul Island.		.....	.....	Several seals seen near rookeries.
27	5.42 a. m.	38	40	56 30	174 00	1	Medium ..	Traveling to northward and eastward.
27	7.40 a. m.	38	41	56 28	174 40	1	.....do	Jumping.
27	7.53 a. m.	38	41	56 27	174 45	1	.....do	Traveling to eastward.
27	11.00 a. m.	40	40	56 25	175 00	6	.....do	Do.
27	11.30 a. m.	40	40	56 22	175 10	2	.....do	Sleeping.
27	11.35 a. m.	40	40	56 22	175 15	2	.....do	Jumping.
27	12.15 p. m.	40	40	56 20	175 25	6do	Sleeping.
				<i>Nast.</i>				
30	1.00 p. m.	42	40	55 45	178 50	1do	Do.

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Record of animals, drift, kelp, etc., observed at sea by the United States

FROM DUTCH HARBOR, UNALASKA, ON CRUISE IN

Date.	Meridian positions.		Mean temperatures.		Seals.	Whales.	Auks.	Albatrosses.	Cormorants.
	Lat. N.	Long. W.	Air, D. B.	Sea, surf.					
1894.									
July 1	57 22 00	167 36 00	45	40	Two				
2	55 17 00	165 05 00	43	41				Several	
3	Akutan Harbor, Akutan Island.		45	41	One	Many	Many	Several	
4	54 00 00	166 48 00	47	43	Five	Two	Few	Several	

FROM DUTCH HARBOR, UNALASKA, TO PRIBILOF ISLANDS, TO ISANOTSKI

July 8	54 30 00	167 04 00	45	44	Three	Many		Several	
9	North anchorage, St. George Island.		46	40	One	One	Many		
10	do.		44	38			Many		
11	do.		44	38			Many		
12	56 42 00	169 42 00	43	39	Three		Many	Few	One
13	56 35 00	168 18 00	43	40	Thirteen				
14	54 56 00	165 21 00	45	41				Few	
	Ikatan Bay.								
15	54 48 00	163 23 00	45	39					
16	54 48 00	163 23 00	45	38					
17	Morzhovoi Village, Traders Cove, Isanotski Strait.		45	38					
18	do.		47	38					
19	do.		52	40					
	Ikatan Bay.								
20	54 46 00	163 18 00	55	40					
21	54 46 00	163 18 00	57	44					
22	54 33 00	162 53 00	48	41					
23	Off Acherk Harbor, Saanak Island.		49	40					
24	54 34 00	162 53 00	48	40					
25	Dutch Harbor, Unalaska.		47	40		Many			

FROM DUTCH HARBOR, UNALASKA, ON CRUISE IN

July 30	Dutch Harbor, Unalaska.		50	42	Two	One		One*	
31	55 03 00	170 48 00	48	41	Six				
Aug. 1	56 41 00	169 37 00	47	39	Many		Many		
2	56 26 00	172 42 00	48	40	Eight	Many			
3	58 22 00	176 22 00	47	41	Two	Several		One	
4	50 25 00	179 13 00	50	43					
5	60 15 00	174 45 00	47	42				One	
6	59 09 00	174 12 00	47	42	Fifteen				
7	57 57 00	173 05 00	50	43	Many	Several		Few	
8	56 53 00	172 43 00	50	44	Eleven			Several	
9	56 00 00	171 52 00	49	44	Twelve	Several			
10	55 38 00	171 09 00	56	46	Many	Several		Several	
11	54 07 00	166 55 00	51	46	Four				

FROM DUTCH HARBOR, UNALASKA, ON CRUISE IN

Aug. 17	54 01 00	166 28 00	50	41	One				
18	55 28 00	169 23 00	46	43	Six	Two			
19	North anchorage, St. George Island.		47	42	Many	Three	Many		Many
20	57 06 00	171 37 00	46	42	Four	Two			
21	57 43 00	171 58 00	45	41	Two				
22	58 24 00	173 07 00	44	41	Many	Three			
23	57 49 00	173 34 00	45	42	Seven				
24	57 07 00	173 45 00	46	41	Two				
25	56 13 00	172 44 00	47	42	Six	Several			
26	55 08 00	171 26 00	47	42	Three				
27	54 05 00	166 52 00	46	42	Seven	One			

* White.

Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895.

BERING SEA, AND RETURN TO DUTCH HARBOR.

Ducks.	Guillemots.	Gulls.	Petrels.	Puffins.	Terns.	Drift.	Kelp.	Remarks.
.....	Several	Several	Several	.....	.....	.....	.....	Many whales off Unimak Pass.
.....	Many	Several	Many	.....	.....	.....	Much.	
.....	Many	Many	Many	Many	.....	.....	Much.	
Few	Many	Several	Many	Many	.....	.....	Much	

STRAIT, TO SANNAK ISLAND, AND RETURN TO DUTCH HARBOR.

Few	Many	Many	Many	Many	Several	Little	Several orcas.
Few	Many	Many	Many	Many	Several	.....	Little
Few	Many	Many	Many	Many	Several	.....	Little
Few	Many	Several	Many	Several	.....	.....	.....
Few	Several	Several	Several	Few	.....	.....	Little
Few	.....	Several	.....	.....	.....	.....	Much
.....	.....	Several	.....	.....	.....	.....	.....
Few	Few	Several	Few	Few	.....	.....	Much
Few	Few	Several	Few	Few	.....	.....	Much
.....	Several	Few	Several	Few	.....	.....	Little
.....	Many	Several	Many	Several	Much	One hair seal.

BERING SEA, AND RETURN TO DUTCH HARBOR.

.....	Few	Few	Few	Many seals near Pribilofs.
.....	Many	Many	Many	Many	Few	.....	Little
.....	Many	Several	Many	.....	.....	.....	.....
.....	Several	Few	Several	.....	.....	.....	.....
.....	Many	Few	Several	.....	.....	.....	.....
.....	Many	Several	Several	.....	.....	.....	.....
.....	Many	Several	Many	.....	.....	.....	.....
.....	Several	Few	Several	.....	.....	.....	.....
.....	Many	Few	Many	Several	Several	.....	Little
.....	Many	Few	Several	Several	.....	.....	Much

BERING SEA, AND RETURN TO DUTCH HARBOR.

.....	Many	Several	.....	Several	.....	.....	.....
.....	Several	Few	Few	.....	.....	.....	.....
.....	Many	Many	Many	Many	.....	.....	.....
.....	Few	.....	Many	Many	.....	.....	.....
.....	Few	Many	Few	Many	.....	.....	.....
.....	Several	Few	Several	.....	.....	.....	.....
.....	Few	Few	Few	.....	.....	.....	.....
.....	.....	Few	Several	Few	.....	.....	.....
.....	Several	Few	Few	Few	.....	.....	.....

Commission steamer *Albatross*, July 1, 1894, to June 30, 1895—Continued.

UNIMAK PASS, AND RETURN TO DUTCH HARBOR.

Ducks.	Gull- mots.	Gulls.	Petrels.	Puffins.	Terns.	Drift.	Kelp.	Remarks.
	Many...	Many...	Many...	Many...	Many...			Great numbers of birds accompanying school of whales.
	Few Many...	Few Several	Few Many...	Several				

PRIBILOF ISLANDS, AND RETURN TO DUTCH HARBOR.

	Many...	Several	Several	Several				Great numbers of whale birds feeding on surface life. One finback whale.
	Few	Few Few	Many Few	Several				
	Many...	Many...	Many...	Many...				
	Many...	Many...	Few...	Many...	Few			Several small land birds.
	Several Many...	Few Many...	Many...	Many...				

HARBOR, AND RETURN TO DUTCH HARBOR.

	Many...	Many...	Many...	Many...			
	Many...	Several	Few				

TO SITKA, SOUTHEAST ALASKA.

	Many...	Many...	Great many.	Several			
	Several	Few Few Few	One Few Few				
		Few	Few	Few			Much...

WHATCOM, WASH. VIA INLAND PASSAGES.

Few		Few				Little..	Little..	Few land birds.
		Few				Little..	Little..	Do.
Few		Several				Little..		Number of land birds.
		Several				Much..	Little..	
		Few				Little..	Little..	
		Few				Much..	Little..	
Few		Few		Few...	Few...	Much..	Much..	
		Few				Little..	Little..	
		Several				Much..	Much..	

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Record of animals, drift, kelp, etc., observed at sea by the United States Fish

FROM NEW WHATCOM, WASH., TO

Date.	Meridian positions.		Mean temperatures.		Seals.	Whales.	Auks.	Albatrosses.	Cormorants.
	Lat. N.	Long. W.	Air, D. B.	Sea, surf.					
1894.	o ' "	o ' "	o	o					
Oct. 10	Victoria	B. C.	51	44					
11	40 34 00	124 49 00	53	46		Three			
12	42 59 00	124 41 00	53	46		Several			
13	39 32 00	124 10 00	56	49				One	

FROM SAUSALITO, CAL.,

1895.									
May 22	38 37 00	123 42 00	51	48					
23	40 51 00	124 16 00	53	51	Two	Many		Many	
24	43 54 00	124 33 00	57	54		Four		Many	
25	47 26 00	125 00 00	51	52		Many		Many	
26	48 18 00	123 41 00	52	49					

May 28 to June 5. IN INLAND WATERS, FROM PORT

FROM ALERT BAY, B. C., TO SAND

June 6	50 54 00	127 59 00	49	49				One	Many
7	52 00 00	133 40 00	49	47		One		Several	
8	52 59 00	139 19 00	45	46				Several	
9	53 57 00	142 31 00	43	43				Several	
10	54 27 00	144 08 00	42	41				Several	
11	55 42 00	147 47 00	41	40		One		Several	
12	55 32 00	152 25 00	42	42		One		Many	
13	55 31 00	159 08 00	44	42	One		Many		

FROM SAND POINT, POPOF ISLAND,

June 15	55 03 00	161 52 00	42	40					
16	Dutch Harbor, Unalaska.		42	40					

FROM DUTCH HARBOR, UNALASKA, TO ST-

June 23	54 38 00	167 34 00	42	42					
24	57 02 00	170 32 00	35	36	Few		Many		Few

FROM ST. PAUL, PRIBILOF ISLANDS, TO NIKOLSKI

June 26	Village Cove, St. Paul Island.		36	36	Few		Many		
27	50 21 00	175 22 00	39	40	Seventeen	Three		Few	
28	56 00 00	179 45 00	41	40		Two		Several	
30	55 43 00	170 05 00	41	40	One				

Commission steamer Albatross, July 1, 1894, to June 30, 1895—Continued.

SAUSALITO, CAL., VIA VICTORIA, B. C.

Ducks.	Gulle- mots.	Gulls.	Petrels.	Puffins.	Terns.	Drift.	Kelp.	Remarks.
		Several				Little..	Little..	Few land birds.
		Few						
		Several						
		Few	Few					

TO VICTORIA, B. C.

Few	Few	Few	Few	Few				Three sea lions. Large masses of velilla.
Several		Many	Many	Many				
Few		Several	Several					One large sea lion. Few geese; one sea lion. Large school of por- poises.
Several		Many				Much..	Much..	

TOWNSEND, WASH., TO ALERT BAY, B. C.

POINT, POPOF ISLAND, ALASKA.

Many		Many	Many	Several				Few geese.
	Many	Several	Several					
		Few	Few					
		One	Several				Little..	
		Several	Several					
		Many	Many	Several				
	Many	Many	Many	Many			Much..	Many Kanooski birds.

TO DUTCH HARBOR, UNALASKA.

Few	Many	Many	Many	Many		Little..	Much..	
	Many	Many	Several	Few			Much..	

PAUL, PRIBILOF ISLANDS, BERING SEA.

	Many	Many	Many	Several				
	Many	Many	Several	Many	Many		Little..	

BERING ISLAND, COMMANDER ISLANDS.

	Many	Many	Many	Several	Few			Large school of porpoises.
	Many		Many					
			Several					
	One	One	Two					

Boarding record of the United States Fish Commission

Date.	Position.		Name of vessel.	Reg.	Net tons.	Nationality.	Port of registry.	Name of master.
	Latitude N.	Longitude W.						
1894. July 14	54 31	165 10	Uranus	3-mast schr.	144	Amer.	San Francisco ..	E. B. Anderson ..
16	Morz hovi Village, Isa- notski Strait.		Frederic	Slp ..	Loss 5	do ..	Owned in Morz- hovi Village.	Peter Johnson ..
16	Morz hovi Village, Isa- notski Strait.		Foam	Schr ..	7	do ..	Sand Point, Alas- ka.	Nicolas Olgin ...
18	Morz hovi Village, Isa- notski Strait.		Olga	Schr ..	43.80	do ..	Unalaska, Alas- ka.	E. Lee
Aug. 8	57 08	172 43	Ida Etta	Schr ..	69	do ..	Seattle	B. B. Whitney ..
10	55 38	171 09	Mascot	Schr ..	40	Brit ..	Victoria	H. F. Siowerd ...
18	54 55	168 55	San Jose	Schr ..	30	do ..	do	M. Foley
18	55 30	170 56	Borealis	Schr ..	37	do ..	do	George Meyer ...
23	57 42	173 18	Mary Ellen	Schr ..	63.08	do ..	do	W. O. Hughes ...
23	57 30	173 54	Rosie Olsen	Schr ..	38.71	do ..	do	A. Whidden
25	56 13	172 44	Walter A. Earle ..	Schr ..	68	do ..	do	L. Magnessen ...
29	Dutch Har- bor, Unalaska		Nicoline	Schr ..	47	Amer.	San Francisco ...	B. F. Tilton
Sept. 4	Off Unalaska Bay.		Kilmeny	Schr ..	19	Brit ..	Victoria	L. Olsen
4	Off Unalaska Bay.		Deeahks	Schr ..	42.85	Amer.	Port Townsend ..	do
4	54 20	165 50	Jane Gray	Schr ..	107	do ..	San Francisco ...	do
6	54 47	166 23	Walter L. Rich ..	Schr ..	75	Brit ..	Victoria	S. Balcom
8	54 05	166 42	Allie I. Alger	Schr ..	75.45	Amer.	Port Townsend ..	Wester
9	55 09	169 03	Triumph	Schr ..	98	Brit ...	Victoria	C. N. Cox
14	54 00	166 40	Columbia	Schr ..	41.17	Amer.	Port Townsend ..	T. I. Powers

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Record of ocean temperatures and specific gravities by the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895.

Date.	Time of day.	Station.	Lat. N.	Long. W.	Depth.	Temperature by attached thermometer.	Temperature of the air.	Temp. of specimen at time spec. grav. was taken.	Specific gravity.	Specific gravity reduced to 15° C.
1894.										
July	1 12 m		57 22 00	167 36 00	Surface	39	39	63	1.0238	1.023391
	3 12 m	Akutak Bay			do	42	46	62	1.0242	1.023850
	13 12 m		56 35 00	168 18 00	do	43	46	62	1.0242	1.023650
	14 12 m		54 56 00	165 21 00	do	43	47	62	1.0242	1.023650
	16 12 m	Ikatan Bay			do	39	47	62	1.0240	1.024450
	17 12 m	Morzhovoi Village			do	38	47	62	1.0238	1.023250
	20 12 m	Ikatan Bay, south side			do	41	57	62	1.0238	1.023250
	22 12 m		54 33 00	162 53 00	do	44	47	62	1.0240	1.023450
	23 12 m	Sannak Island			do	40	49	62	1.0240	1.023450
	24 12 m		54 34 00	162 53 00	do	41	47	62	1.0240	1.023450
	25 12 m	Unalaska Harbor			do	42	50	62	1.0240	1.023450
Aug.	1 12 m		56 41 00	169 37 00	do	40	51	62	1.0240	1.023450
	2 12 m		56 26 00	172 42 00	do	42	50	62	1.0240	1.023450
	3 12 m		58 22 00	176 22 00	do	43	50	62	1.0240	1.023450
	4 12 m		59 25 00	179 13 00	do	45	54	62	1.0240	1.023450
	5 12 m		60 15 00	174 45 00	do	42	46	62	1.0240	1.023450
	6 12 m		59 09 00	174 12 00	do	43	49	62	1.0240	1.023450
	7 12 m		57 57 00	173 05 00	do	45	54	65	1.0234	1.023270
	8 12 m		56 53 00	172 43 00	do	45	51	65	1.0240	1.023270
	9 12 m		56 00 00	171 52 00	do	44	49	65	1.0244	1.024270
	10 12 m		55 38 00	171 09 00	do	45	54	65	1.0244	1.024270
	18 12 m		55 28 00	169 23 00	do	45	47	65	1.0242	1.024070
	21 12 m		57 43 00	171 58 00	do	41	46	65	1.0242	1.024070
Sept.	20 12 p. m.	Unimak Pass			do	40	44	65	1.0240	1.023870
	21 6 a. m.		54 42 00	162 10 00	do	39	43	65	1.0240	1.023870
	21 12 m		55 10 00	161 52 00	do	43	49	65	1.0238	1.023670
	21 6 p. m.		55 22 00	160 15 00	do	44	48	65	1.0236	1.023470
	22 6 a. m.		55 28 00	157 10 00	do	43	46	64	1.0236	1.023328
	22 12 m		55 35 00	155 41 00	do	44	49	63	1.0240	1.023591
	22 6 p. m.		55 45 00	154 28 00	do	44	46	63	1.0240	1.023591
	22 12 p. m.		55 52 00	153 15 00	do	43	47	63	1.0240	1.023591
	23 6 a. m.		56 05 00	152 12 00	do	44	49	63	1.0240	1.023591
	23 12 m		56 11 00	150 48 00	do	44	49	63	1.0240	1.023591
	23 6 p. m.		56 15 00	150 12 00	do	45	49	63	1.0242	1.023791
	23 12 p. m.		56 20 00	149 45 00	do	44	49	63	1.0240	1.023591
	24 6 a. m.		56 18 00	149 25 00	do	43	48	63	1.0240	1.023591
	24 12 m		56 22 00	148 57 00	do	45	49	63	1.0241	1.023691
	24 6 p. m.		56 25 00	147 35 00	do	45	47	63	1.0240	1.023591
	24 12 p. m.		56 32 00	146 12 00	do	45	49	63	1.0240	1.023591
	25 6 a. m.		56 35 00	144 55 00	do	45	49	63	1.0242	1.023791
	25 12 m		56 37 00	143 40 00	do	45	51	63	1.0240	1.023591
	25 6 p. m.		56 42 00	142 04 00	do	46	51	63	1.0240	1.023591
	25 12 p. m.		56 48 00	140 40 00	do	45	50	63	1.0238	1.023391
	26 6 a. m.		56 47 00	139 05 00	do	46	50	63	1.0236	1.023191
	28 12 m	Sitka Harbor, high water			do	47	51	63	1.0234	1.022991
	29 1 p. m.	Peril Strait			do	46	52	63	1.0223	1.021891
	30 12 m	Douglas Island			do	41	47	63	1.0202	1.019791
	30 12 p. m.	Taku Harbor			do	40	45	63	1.0176	1.017191
Oct.	1 12 m	Wrangle Narrows			do	41	45	63	1.0184	1.018991
	2 12 p. m.	Marya Island			do	45	51	63	1.0190	1.018591
	3 12 p. m.	Promise Island			do	44	47	63	1.0182	1.017791
	4 12 p. m.	Bella Bella Harbor			do	46	48	63	1.0182	1.017791
	5 12 p. m.	Alert Bay			do	44	48	63	1.0208	1.020391
	6 p. m.	Bellingham Bay			do	49	54	63	1.0162	1.015791
1895.										
June	7 12 m		52 00 00	133 40 00	do	48	50	70	1.0232	1.023630
	7 6 p. m.		52 12 00	134 35 00	do	47	50	70	1.0232	1.023630
	7 12 p. m.		52 28 00	135 40 00	do	47	48	70	1.0232	1.023630
	8 6 a. m.		52 41 00	136 58 00	do	46	48	70	1.0232	1.023630
	8 12 m		52 59 00	138 19 00	do	46	47	70	1.0230	1.023630
	8 6 p. m.		53 10 00	139 10 00	do	45	45	70	1.0230	1.023630
	8 12 p. m.		53 26 00	140 12 00	do	44	44	70	1.0236	1.024230
	9 6 a. m.		53 38 00	141 10 00	do	44	43	70	1.0236	1.024230
	9 12 m		53 57 00	142 31 00	do	42	43	70	1.0236	1.024230
	9 6 p. m.		54 06 00	142 48 00	do	42	43	70	1.0238	1.024430
	9 12 p. m.		54 11 00	143 15 00	do	42	43	70	1.0240	1.024630
	10 6 a. m.		54 18 00	143 35 00	do	42	42	70	1.0240	1.024630
	10 12 m		54 27 00	144 08 00	do	41	42	70	1.0240	1.024630
	10 12 p. m.		55 04 00	145 50 00	do	41	42	70	1.0238	1.024430
	11 6 a. m.		55 30 00	146 45 00	do	41	40	70	1.0240	1.024630
	11 12 m		55 42 00	147 47 00	do	41	42	70	1.0238	1.024430

Record of ocean temperature and specific gravities by the United States Fish Commission steamer Albatross, July 1, 1894, to June 30, 1895—Continued.

Date.	Time of day.	Station.	Lat. N.	Long. W.	Depth.	Temperature by attached thermometer.	Temperature of the air.	Temp. of specimen at timespec. grav. was taken.	Specific gravity.	Specific gravity reduced to 15° C.
1895.			° ' "	° ' "		°	°	°		
June 11	12 p. m.		55 35 00	150 48 00	Surface.	41	41	70	1.0240	1.024030
12	6 a. m.		55 32 00	151 12 00	do	42	40	70	1.0240	1.024630
12	12 m.		55 32 00	152 25 00	do	42	42	70	1.0242	1.024830
12	6 p. m.		55 38 00	154 35 00	do	43	43	70	1.0240	1.024670
12	12 p. m.		55 42 00	156 16 00	do	43	42	70	1.0240	1.024030
13	6 a. m.		55 40 00	157 32 00	do	43	42	70	1.0236	1.024230
26	12 m.	St. Paul Island.			do	34	39	70	1.0232	1.023830
26	6 p. m.		50 50 00	171 35 00	do	30	37	70	1.0232	1.023830
26	12 p. m.		56 46 00	172 55 00	do	39	37	70	1.0232	1.023830
27	6 a. m.		56 32 00	174 10 00	do	40	38	70	1.0234	1.024030
27	12 m.		56 21 00	175 22 00	do	40	40	70	1.0236	1.024230
27	6 p. m.		56 12 00	176 20 00	do	41	40	70	1.0238	1.024430
27	12 p. m.		56 02 00	177 25 00	do	40	40	70	1.0238	1.024430
28	6 a. m.		56 00 00	178 40 00	do	40	40	70	1.0238	1.024430
28	12 m.		56 00 00	179 45 00	do	40	42	70	1.0240	1.024630
28	6 p. m.		55 50 00	179 55 00	do	41	41	68	1.0238	1.024116
28	12 p. m.	East.	55 45 00	180 05 00	do	41	40	68	1.0240	1.024316
30	6 a. m.		55 48 00	180 20 00	do	40	40	68	1.0242	1.024516
30	12 m.		55 43 00	179 05 00	do	40	41	68	1.0242	1.024516
30	6 p. m.		55 52 00	179 30 00	do	40	42	68	1.0242	1.024516
80	12 p. m.		55 50 00	177 05 00	do	41	30	68	1.0244	1.024716

Table of air and water temperature observations made at the Marc Island navy-yard, California, by the United States Fish Commission steamer Albatross, October 13, 1894, to May 17, 1895.

Date.	Temperature.				Date.	Temperature.			
	Air.		Surface water.			Air.		Surface water.	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
Oct. 1894.					1894.				
Oct. 18	58	65	61	63	Nov. 20	49	63	56	58
19	53	62	61	62	21	49	62	56	58
20	58	64	60	61	22	49	60	55	57
21	58	64	60	61	23	48	61	56	57
22	57	67	60	63	24	48	65	56	50
23	58	63	60	61	25	49	61	56	57
24	54	64	60	63	26	53	59	56	58
25	55	69	60	62	27	53	61	55	57
26	53	64	59	61	28	49	60	53	56
27	49	67	57	61	29	47	57	54	55
28	50	67	58	61	30	47	54	54	56
29	55	70	58	61	Dec. 1	43	52	53	55
30	53	64	59	60	2	44	50	54	55
31	57	64	59	60	3	47	57	53	54
Nov. 1	55	63	60	62	4	49	54	53	53
2	55	70	59	61	5	50	54	53	53
3	56	70	59	61	6	49	52	52	53
4	58	71	59	62	7	47	55	50	52
5	54	71	58	62	8	48	55	50	52
6	55	72	60	62	9	48	57	52	52
7	57	76	59	61	10	42	54	50	52
8	56	73	59	62	11	46	56	50	54
9	52	66	59	63	12	46	57	49	51
10	52	65	60	62	13	48	59	49	51
11	54	73	60	62	14	43	49	49	50
12	52	73	59	61	15	46	54	50	51
13	53	72	60	60	16	47	53	50	51
14	52	70	58	60	17	49	54	49	50
15	50	61	58	59	18	48	50	49	50
16	50	61	58	59	19	47	50	49	50
17	46	63	57	60	20	49	67	49	50
18	47	67	57	60	21	51	55	49	50
19	50	68	57	58	22	48	54	48	49

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Table of air and water temperature observations made at the Mare Island navy-yard, California, by the United States Fish Commission steamer Albatross, etc.—Continued.

Date.	Temperature.				Date.	Temperature.			
	Air.		Surface water.			Air.		Surface water.	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
Dec. 1894.					Mar. 1895.				
23.....	44	52	48	49	5.....	52	64	In dry dock.	
24.....	40	52	46	49	6.....	50	61	Do.	
25.....	38	47	46	48	7.....	51	64	Do.	
26.....	37	51	45	46	8.....	50	63	Do.	
27.....	43	47	45	46	9.....	50	59	Do.	
28.....	46	49	45	46	10.....	50	60	Do.	
29.....	46	53	45	46	11.....	50	59	Do.	
30.....	47	57	45	46	12.....	49	56	Do.	
31.....	43	54	43	46	13.....	43	57	Do.	
Jan. 1895.					14.....	39	55	Do.	
1.....	39	54	45	46	15.....	40	57	Do.	
2.....	45	49	45	46	16.....	43	59	Do.	
3.....	44	54	45	46	17.....	45	55	Do.	
4.....	50	56	46	46	18.....	49	59	Do.	
5.....	47	52	48	51	19.....	46	62	Do.	
6.....	47	53	49	50	20.....	46	58	Do.	
7.....	43	47	45	49	21.....	49	53	Do.	
8.....	45	55	47	49	22.....	48	61	Do.	
9.....	47	53	48	48	23.....	45	69	Do.	
10.....	40	52	48	48	24.....	49	65	Do.	
11.....	48	51	48	48	25.....	52	70	Do.	
12.....	49	55	48	49	26.....	58	66	Do.	
13.....	50	57	49	49	27.....	55	63	Do.	
14.....	47	55	49	50	28.....	45	54	Do.	
15.....	41	53	48	49	29.....	41	58	54	55
16.....	45	49	48	48	30.....	44	63	54	55
17.....	43	40	46	48	31.....	48	64	54	56
18.....	45	49	47	48	Apr. 1.....	50	60	54	56
19.....	44	49	46	48	2.....	45	62	54	56
20.....	41	50	47	48	3.....	48	63	54	55
21.....	47	53	48	49	4.....	42	57	53	56
22.....	48	56	48	49	5.....	41	63	53	57
23.....	43	52	48	50	6.....	47	68	55	57
24.....	39	51	47	50	7.....	50	70	54	56
25.....	39	50	47	49	8.....	52	63	54	55
26.....	39	47	45	47	9.....	51	61	54	58
27.....	39	50	45	46	10.....	49	69	55	57
28.....	39	52	45	46	11.....	48	64	54	57
29.....	38	48	45	45	12.....	48	69	55	58
30.....	40	54	43	45	13.....	49	63	55	56
31.....	41	55	43	45	14.....	47	65	55	58
Feb. 1.....	43	55	45	45	15.....	48	64	54	58
2.....	42	58	44	45	16.....	55	69	57	58
3.....	41	58	45	45	17.....	52	60	56	58
4.....	41	58	44	45	18.....	48	70	56	58
5.....	41	58	45	45	19.....	51	71	55	61
6.....	41	58	45	45	20.....	55	78	58	65
7.....	43	55	45	47	21.....	56	85	59	63
8.....	46	56	45	48	22.....	56	74	58	66
9.....	44	57	45	45	23.....	54	62	60	65
10.....	48	54	45	48	24.....	56	64	60	62
11.....	48	55	45	48	25.....	55	65	59	62
12.....	51	58	45	50	26.....	56	65	60	61
13.....	48	57	45	50	27.....	56	64	60	60
14.....	44	59	44	50	28.....	54	69	60	62
15.....	48	59	45	50	29.....	53	68	60	62
16.....	49	60	45	52	30.....	52	66	60	61
17.....	45	62	45	52	May 1.....	61	64	60	61
18.....	50	65	45	54	2.....	52	68	60	61
19.....	51	64	52	54	3.....	53	62	60	60
20.....	53	62	51	54	4.....	57	65	60	61
21.....	54	63	53	54	5.....	57	60	60	62
22.....	55	60	53	55	6.....	54	63	60	61
23.....	50	61	53	56	7.....	55	68	60	62
24.....	50	61	52	54	8.....	55	72	60	62
25.....	48	62	52	55	9.....	55	77	60	63
26.....	49	62	54	56	10.....	62	88	60	66
27.....	47	70	In dry dock.		11.....	64	89	60	66
28.....	51	69	Do.		12.....	64	82	62	64
Mar. 1.....	51	70	Do.		13.....	56	80	62	64
2.....	52	65	Do.		14.....	54	72	62	66
3.....	48	71	Do.		15.....	53	64	62	66
4.....	48	70	Do.		16.....	52	60	60	63
					17.....	54	70	61	65